



FRIDAY, MARCH 10, 1876.

Contributions.

Mr. Buel's Interlocking Switches and Signals.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Mr. Buel has doubtless added a valuable chapter to the science of railroad operating, and that, too, upon a branch of the service to which, whatever attention or study may have been given, but few mechanical contrivances have been applied producing so marked a degree of safety as to attract general attention, nor has there, I believe, been anything proposed approaching in importance that of the interlocking system as applied to the working of switches and the signals which are designed to protect them from causing accident, on a large proportion of all European roads; while in England an act of Parliament requires all roads of importance to use some system of interlocking switch and signal levers, subject to the approval of the "Board of Trade;" in consideration of which it is truly a matter of surprise that only two companies have taken active measures toward the introduction and perfection of the interlocking system in this land of 75,000 miles of railroad—surely a broad field, first for the establishment of the fact that life and property will be less liable to destruction, and again for inventive minds to evolve the simplest means compatible with the requirements of certainty of action at all times and under all circumstances for effecting desirable results. Mr. Buel's ability to master the subject is so apparent that it is hoped a request to further elucidate the principles involved, and bring order and harmony out of the present confusion and discord existing in the practices of railway managements of this important duty, will be at his earliest convenience complied with; and should each effort of his be subjected to no severer criticism than the one issued in your impression of Friday, Feb. 11, it will probably be for himself a "satisfaction," and for the railroads throughout the country a valuable service may be done.

The principal and perhaps only element to which criticism will be directed is the use of electricity; and that, too, from the large and eminently influential body of practical men who as yet retain a distrust of the electric current for the performance of so important a duty as changing or transmitting signals over distances so short that it may be done by means of a lever and connections which appeal directly to the senses; and while there can be no question that the consciousness of the electric fluid or current passing along or through a suitable conductor and accomplishing prearranged results is decidedly satisfactory to the educated electrician, or even novice, yet by the man accustomed to deal with the large masses of matter comprising railroad plant, the application of a grosser medium than is generally used and a less subtle element than electricity—something of which a comparative estimate may be made with the use of the eye only, is usually believed to be more likely to attain the desired end.

The effort to diminish the number of levers to which a part of the signalman's attention would be given seems to be good reasoning from a theoretical point of view, while the reduction of first cost seems to be practical reasoning (to which commend us—not the "reason" but the "reduction") for making earnest endeavors to eliminate a number of levers from the signal cabin; providing, of course, the efficiency of the apparatus is in no manner interfered with. In order to obviate the necessity of employing two levers for each switch it is proposed to operate the switch and lock, as shown by the accompanying sketch, of which the following is a description:

"A is the sliding bar supported by the guides, B, B, B, to preserve its rectilinear motion, provided with the slots, G, H, H, the former of which (slot G) connects one end of the bell crank, I, by means of pin, J, and the latter slots, H, H, are employed for operating the vertical reciprocating blocks, K, K, being secured thereto by means of pins, L, L. M is a pin located in bell crank I, and upon which the said crank oscillates, and said crank is provided with another pin, N, to which is attached the rod, O, leading from rails, P, P. The blocks, K, K, are secured in a vertical position by the guides, R, R. The operation is as follows: Supposing the bar, A, to stand as shown in drawing, the rails, P, P, appear at the end of its position in one direction, and the blocks, K, K, at the back of said rails. Now, by moving the bar, A, in the direction of the arrow, the pins, L, L, in connection with blocks, K, K, are made to descend by the inclined portion of that end of slots, H, H, while at the same time the straight portion at one end of slot, G, is presented to pin, J; therefore the bell crank has no motion until the said pin, J, strikes the inclined portion of slot G, when it begins to ascend, carrying with it that end of the said bell crank, shifting the rails to the opposite end of its stroke. This occurs, however, when the pins, L, L, have reached the lower end of their stroke and are moving through the straight portion of slots H, H, at the end of which they meet the inclined plane at this end of the slots and begin to ascend, forcing up the blocks, K, K, behind the rail—this is after the pin, J, has reached the upper end of the inclined plane of slot G, and is moving through the second horizontal portion of said slot.

"By this means the rails are unlocked, shifted and relocked at one operation of the lever, and thus they remain until there is a reverse movement of the said lever, when the result is that of placing the apparatus in the position where the operation commenced."

This would reduce the number of levers by one half, or, as in the case mentioned where 24 levers are used, only 10 would be needed if signals can be safely worked by electricity as proposed

ed by Mr. Buel, or, if deemed best, as your correspondent believes, to operate signals with separate levers, only 14 would be needed instead of 24. Consequently, as Mr. Buel states, the interlocking would be less complicated, and to such an extent that the switch-lock lever would be the lever upon which the interlocking was effected, and as yet preferably by mechanical appliances, while electricity might be judiciously employed as a tell-tale to keep the signalman informed as to the position of switches and signals in case of fog or other obstruction to vision. Or, what is of far greater importance and entirely neglected by Mr. Buel, it may be made to prevent the removing of the switch lock, much less the rail, and thus preclude the possibility of the switch being moved during the transit of trains, which might be accomplished by the train in passing opening or closing a circuit as may be best. This is well done by English engineers with a very simple mechanical contrivance, suggested, I believe, by the familiar example of the parallel ruler.

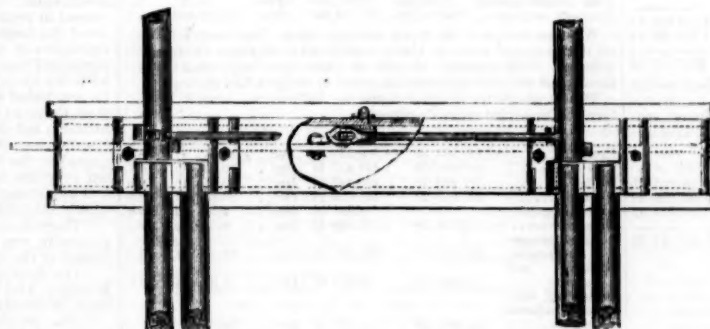
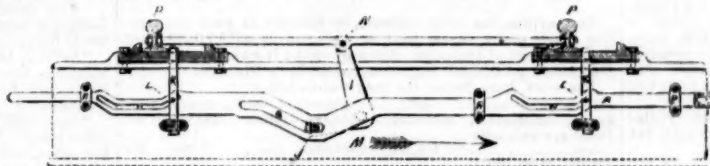
Serious accidents have occurred resulting from the facility with which the points may be moved, during the passage of any train. Mr. B. would evidently find also that "advantages of the most pronounced character would result from the use of a reliable means for preventing accidents caused by the foregoing."

In regard to the conditions cited by Mr. Buel and considered in the same order:

a. "There must be no uncertainty in the method of closing the circuits." Granted all that is claimed by him, if not disproved by what follows:

b. "The mechanism which actuates the signal must be strong and durable," and as opposed to his views for the fulfilling of the condition it is respectfully submitted that a signal of flannel working in a glass case and by electricity cannot be, when erected in exposed positions, made as strong and durable in proportion to the amount of material used as it may be if worked by a connecting rod or even cable.

c and d. "The battery must be properly proportioned and maintained." "The regular winding of weight."



It may be properly proportioned, but "maintained" means constant attention and frequent renewals, while it is maintained that the amount of attention required in excess of what would be needed by the use of the "primitive" lever would not be offset by the reduction of the signal levers. As to the winding up of weight, it is believed to be superfluous, as a signal may be so arranged as to occupy, by its force of gravity, the normal or danger side, and be set at "line clear" by a simple movement of signal lever, requiring but little skill to manipulate.

e. The integrity of the "wires must be preserved," which implies expensive construction and maintenance, as opposed to the simpler contrivance of the lever and connecting rod.

To conclude with the considerations as stated by Mr. Buel:

I does not seem to hold good, inasmuch as a reduction of the number of signal levers in the cabin is at the expense of an increased number of parts elsewhere, and no less objectionable.

II., III., IV. are believed to be approximately correct, and there is something in all this.

S. H. FINCH.

NEW YORK, February, 1876.

The Southern Pacific and the Central Pacific.

WASHINGTON, D. C., Feb. 16, 1876.

TO THE EDITOR OF THE RAILROAD GAZETTE:

My attention was called yesterday to a letter published in your paper of the 11th inst., evidently official, from the office of the Southern Pacific Railroad Company of California, over the signature of the Secretary of that company. The letter commences very properly with the name of Mr. C. P. Huntington, and calls attention to the truthful, gentle and modest qualities of the distinguished Vice-President of the Central Pacific Railroad Company, in a way creditable alike to the head and heart of the evidently admiring Secretary, who appears to have doubts, however, as to the possession of those high qualities by any one else.

The letter is full of fact and fiction, jumbled together in inextricable confusion, of representations and misconceptions, of bad geography and worse typography, of disingenuousness and

even untruthfulness, so that it would be almost impossible to explain in detail the several matters touched upon within the reasonable limits of a newspaper article.

The mixed character of these statements reminds me very much of recent statements before the House Committee on the Pacific Railroads, in reply to certain questions asked by that committee, as follows—(I quote from the official report printed for the use of the committee):

"Mr. Atkins, of the committee, proposed the following interrogatories to Mr. Huntington:

"Q. What are the names of the officers and directors of the Contract & Finance Company?

"A. I cannot tell you. Mr. Doty was President. Judge Brown, at my side here, is recently from there, and he says that the Contract & Finance Company have gone out of business.

"Q. And you don't recollect their names?

"A. No, I do not. Perhaps Judge Brown could tell you. Mr. Doty was President, I think. I have not been much on the other coast for ten or fifteen years.

"Q. Then the gentleman does not recollect any of them except Mr. Doty.

"A. Well, Judge Brown says that Mr. Doty is not President now.

"Q. What I want to know is, the names of the President and the officers of the Contract and Finance Company?

"A. I cannot give them to you. I think I have heard them but, it is a matter that I have had nothing to do with.

"Q. What are the names of the officers and directors of the Western Development Company?

"A. Mr. Doty is the President of that. I cannot tell you who the directors are. Do you know, Judge Brown?

Judge Brown.—I do not.

"Q. How has the Southern Pacific Railroad been constructed.

"A. By putting down steel rails. They are doing some very excellent work. They are putting down some red-wood ties which are very durable.

"Q. What company or companies have undertaken to build it, and what price per mile is to be paid, in stock, bonds, or otherwise?

"A. I cannot tell you. The Western Development Company, as I understand, took the bonds of the company and a portion of the stock. I think a large portion of the stock, but I do not know. I have not seen the contract. I have great confidence in my associates over there, my fellow directors in the Central. I am not a director in the Southern. I was for a short time, but I am not now.

"Q. Is not the contract price for the work practically an exhaustive contract, and does it not exhaust the capital stock, the first mortgage bonds, and most of the local appropriations made in aid of its construction?

"A. I have no doubt about that. I can see very readily how people here who do not understand the topography of that country would think it was a very high price. From Caliente to the summit we have, I think, 17 tunnels, and a good many are pretty long tunnels. Then we cross a number of ranges of mountains. We have a tunnel nearly 8,000 feet long, the San Fernando tunnel. If we did not work with great economy we could not build the road at all."

These clear and lucid responses made by Mr. Huntington to the interrogatories of the committee show from what source the Secretary has copied his style of writing.

Some hundred years or more ago La Fontaine wrote a very pretty fable; and while it may not be applicable to this particular case, I am sure that all Californians will thank me for calling to their recollections this example of the standard literature of a past generation, as it will serve to remind them how little we have progressed in these later days:

A FABLE.

Sly Bertrand and Ratto in company sat,
(The one was a monkey, the other a cat,)
Co-servants and lodgers:
More mischievous codgers
Ne'er messed from a platter since platters were
flat.

Was anything wrong in the house or about it,
The neighbors were blameless—no mortal could doubt it,
For Bertrand was thievish and Ratto so nice,
More attentive to cheese than he was to the mice.
One day the two plunderers sat by the fire,
Where chestnuts were roasting, with looks of desire.
To steal them would be a right noble affair.
A double inducement our heroes drew there—
'Twould benefit them could they swallow their fill,
And then 'twould occasion to somebody ill.
Said Bertrand to Ratto, "My brother, to-day
Exhibit your powers in a masterly way,
And take me these chestnuts, I pray,
Which were I but otherwise fitted
(As I am ingeniously witted)
For pulling things out of the flame,
Would stand but a pitiful game."
'Tis done," replied Ratto, all prompt to obey;
And thrust out his paw in a delicate way.
First giving the ashes a scratch,
He opened the coveted batch,
Then lightly and quickly impinging,
He drew out, in spite of the singeing,
One after another, the chestnuts at last,
While Bertrand contrived to devour them as fast.

If a misjudging and censorious world, in pointing the moral, should substitute Central Pacific Railroad Company for Sir Bertrand, and Southern Pacific Railroad Company for Ratto, or should even make a more personal application, I feel confident that a letter from Secretary Willcutt would set everything right.

Please accept my thanks, Mr. Editor, for this and a former hearing in your valuable journal.

FRANK S. BOND, Vice-President.

ANNUAL REPORTS.

Pennsylvania.

The annual report for the year 1875 comes to hand too late for more than a brief summary this week, and we reserve it for fuller treatment hereafter. The report covers all the lines east of Pittsburgh and Erie, including the 358 miles of the main line from Pittsburgh to Philadelphia, the 547 miles of branches in Pennsylvania, the 288 miles of the Philadelphia & Erie, the 301 miles of the United New Jersey (including the connecting and the Philadelphia & Trenton roads), the 80 miles of the Belvidere Delaware and Flemington and 66 miles of the Delaware & Raritan Canal, in all 1,574 miles of railroad and 66 of canal. The change in mileage from 1874 is an increase of 28 miles in the branches in Pennsylvania. The line owned is the

The stock and funded debt representing this property are as follows:

CAPITAL STOCK.	
Preferred shares (\$6.711 per mile).....	\$2,425,400
Common shares (\$26.700 per mile).....	9,649,100
Convertible scrip (\$798 per mile).....	288,700
	\$12,363,200

FUNDED DEBT.	
First mortgage sinking fund bonds.....	\$28,000
First mortgage 7 per cent. bonds, due Jan. 1, 1893.....	2,888,000
Income bonds, 7 per cent. due Jan. 1, 1888.....	1,087,000
Consolidated 6 per cent. sterling bonds, due July 1, 1903, \$200,000, say.....	3,893,200
St. Louis, Jacksonville & Chicago Railroad bonds, assumed in purchase of road from Roadhouse to Louisiana, first mortgage, 7 per cent., maturing April 1, 1894.....	564,000
Second mortgage, maturing July 1, 1898.....	188,000

Total bonds (\$22,592 per mile).....	\$8,148,200
Total stock and bonds (\$56,742 per mile).....	\$20,506,400

The figures per mile are per mile owned.

The only change in the stock is an increase of \$719,200 in common stock, and a corresponding decrease of convertible scrip due to the conversion of so much of the latter into the former. In bonds there is a decrease of \$49,000 in the first mortgage sinking fund bonds, and an increase of \$200,000, reckoned in the report as \$773,300, in the consolidated sterling bonds, giving a total increase of \$224,300 gold in the capital account. There was expended during the year for locomotives and additional cars purchased, \$85,004.30. For additional cost of steel used in track repairs over cost of iron and for improvement of permanent way, \$353,400.81, and sundry smaller amount for improvements, making an aggregate of \$523,710.30.

The President, Mr. T. B. Blackstone, in his report, says:

"The aggregate length of the lines of railway operated by your company under perpetual lease is 288 6-10 miles.

"In each case the terms of the lease require your company to make all necessary improvements and additions to the railway, and to provide rolling stock for operating it.

"In pursuance of such requirements and the demands of traffic resulting from the operation of the leased lines, your company has, during the last ten years, expended from the proceeds of its several issues of stocks and bonds about \$4,500,000.

"The Joliet & Chicago Railroad and the St. Louis, Jacksonville & Chicago road have both been greatly improved by the expenditures referred to, and all of the leased lines are now worth to your company much more than an amount which would be fairly represented by the annual rent paid.

"The leased lines are essential parts of your railway system, and your property interest has become so merged in them that for the purpose of considering the general results of traffic it becomes necessary to ascertain what may be considered the permanent investment in or cost to your company of the entire property.

"The stock and bonds issued by your company represent the cost of lines owned by it and the expenditures made for improvements and rolling stock upon lines held under lease. The additional cost to your company is shown by the several sums of annual rent paid, which may be capitalized for the year 1875 as follows:

Rent paid Joliet & Chicago Railroad Company.....	\$131,905 00
Capitalized at 7 per cent. represents.....	\$1,880,091 43
Rent paid St. Louis, Jacksonville & Chicago Railroad Company.....	240,000 00
Capitalized at 7 per cent. represents.....	3,428,571 43
Rent paid Louisiana & Missouri River Railroad Company.....	41,801 24
Capitalized at 7 per cent. represents.....	597,160 87
Total.....	\$5,905,803 43
Add amount of stocks and bonds issued and assumed by C. & A. Railroad Co., as before stated.....	20,506,400 00
Total.....	\$26,412,203 43

"Although the actual cost of each of the roads operated was, and if constructed at any time during the last five years would have been, much greater, the foregoing statement is assumed to fairly represent, for the purposes referred to, what is commonly called permanent investment.

"It is equal to an average cost of \$40,634.16 per mile of main track, excluding all second main track and sidings. If the length of first and second main tracks is taken as the basis of division, excluding sidings, which is a common estimate on double-track railways, the average cost per mile is \$37,518.40.

"We think that the most incredulous 'granger' will admit that for a road like yours, with nearly one-half its track laid with steel rails, with ample equipment to meet promptly all demands for transportation, and its entire railway property in first-class condition, the cost upon which you seek to obtain a reasonable annual revenue is not extravagant."

The work done was as follows:

	1875.	1874.	Inc. or Dec.	P. c.
Train mileage—				
Passenger.....	945,950	1,008,926	Dec.. 62,976	6.2
Revenue freight.....	1,362,023	1,359,023	Inc.. 3,000	0.2
Total of trains earning revenue.....	2,307,973	2,367,949	Dec.. 59,976	2.5
Total mileage of locomotives.....	3,539,979	3,562,625	Dec.. 22,646	0.6
Passengers carried.....	602,264	904,223	Dec.. 41,959	4.64
Passenger mileage.....	99,919,851	104,919,851	Dec.. 5,000,000	4.77
Tons of freight carried.....	1,545,802	1,421,158	Inc.. 124,644	8.77

The earnings and the expenses for the year were as follows:

	1874.	1875.	Inc. or Dec.	P. c.
From passengers.....	\$1,420,350 42	\$1,252,688 77	Dec.. \$167,661 65	11.8
From freight.....	3,446,880 91	3,175,531 43	Dec.. 273,349 48	7.9
From express.....	101,059 03	98,880 37	Dec.. 2,178 66	2.7
From mail.....	109,697 03	36,192 36	Dec.. 13,504 67	12.3
Miscellaneous sources.....	48,240 64	35,470 90	Dec.. 12,769 74	26.4
Totals.....	\$5,126,228 93	\$4,866,763 83	Dec.. \$259,464 20	9.2

	1874.	1875.	Inc. or Dec.	P. c.
For conducting transportation.....	\$802,693 73	\$755,451 45	Dec.. \$47,212 28	5.9
For motive power.....	799,720 36	729,422 36	Dec.. 70,298 00	8.8
For maintenance of way.....	781,140 35	716,610 00	Dec.. 64,530 35	8.3
For maintenance of cars.....	243,386 96	249,916 45	Inc.. 6,529 49	2.7
For general expenses.....	102,409 65	152,095 08	Dec.. 49,685 43	6.0
Total.....	\$2,789,351 06	\$2,604,125 34	Dec.. \$185,225 72	6.6

	1874.	1875.	Inc. or Dec.	P. c.
Earnings from all sources.....	\$5,126,228 93	\$4,866,763 83	Dec.. \$259,464 20	9.2
Operating expenses.....	2,789,351 06	2,604,125 34	Dec.. 185,225 72	6.6
Net earnings.....	\$2,336,877 87	\$2,262,638 49	Dec.. 74,239 38	12.2
Balance at the credit of this account, Jan. 1, 1875.....		\$119,893 67		
Gross receipts from traffic.....		\$4,656,763 83		
Total.....		\$4,776,657 50		

DISBURSEMENTS.	
Interest on funded debt.....	\$574,284 22
Interest on convertible scrip.....	70,553 00
Paid St. Louis, Jacksonville & Chicago, rent.....	240,000 00
Paid Joliet & Chicago, rent.....	121,005 00
Paid Louisiana & Missouri River Railroad, rent.....	41,801 24
Paid dividends, Nov. 24 and 25.....	1,024,373 00
Paid sinking fund.....	47,000 00
Operating expenses (less taxes unpaid).....	2,523,256 51
	\$4,650,071 97

Balance Dec. 31, 1875..... \$126,585 53

In comparing the disbursements with those of 1874, we find an increase of \$70,347.60 in interest on funded debt, a decrease of \$14,287.69 in Joliet & Chicago rent, a decrease of \$81,672.59 in Louisiana & Missouri River rent, and a decrease of \$44,000 in payment to sinking funds.

The report says:

"Large sums have been appropriated from income account in years past, when the company had no other available fund for procuring additional property or for improvements, and subsequently, when bonds and shares of stock were sold to provide funds for such purposes, that account was not reimbursed by the entry of corresponding amounts. Had such entries been made a much larger balance would appear at the credit of that account.

"The general assets of the company at the close of the year, in addition to its railway and equipment, consisting of supplies, fuel, etc., on hand for future use, securities of the Mississippi River Bridge Company, bills and accounts receivable, stocks, cash and cash assets considered good, in excess of bills and accounts payable, amount to \$1,123,531.03, which may be considered the accumulated surplus, in which is included the balance to the credit of the income account."

Of the freight moved last year, 88.35 per cent. was local and 11.65 per cent. through. There was an increase of 12.71 per cent. in the local freight and a decrease of 14.04 per cent. in the through. Four-fifths of the passenger receipts were from local passengers, and these local passenger receipts fell off nearly 9 per cent.

	1875.	1874.
Passenger train.....	\$1 53	\$1 61 1/2
Freight train.....	2 33	2 53 1/2

The locomotive expenses were 19.25 cents in 1875 against 20.80 cents in 1874, the decrease being nearly 8 per cent.

There were laid during the year 8,811 tons of steel rails (98.98 miles of track), 238 tons of iron rails, and 239,297 cross-ties. The road has now 276.65 miles of steel track.

Concerning the lease of the Chicago & Illinois River Railroad and the decrease in earnings the report says:

"On the 27th of January, 1875, a circular was forwarded to each stockholder in relation to the proposed lease of the Chicago & Illinois River Railroad, which had been built from Joliet to the Mazon River, traversing the Wilmington coal fields, upon a line nearly parallel with yours, at a distance of about four miles, threatening formidable competition with your railway.

"A majority of the stockholders having consented in writing to the leasing of the road between Joliet and the Mazon River, the Board of Directors directed a lease to be executed, and it was made on the 1st day of March last. The lease provides for operating the road by your company upon an agreed basis of 70 per cent., to be retained for operating expenses, and for a division of the net earnings from the coal traffic on the line of the Chicago & Illinois River Railroad Company and that of your company between Joliet and the Mazon River, your company taking two-thirds and the Chicago & Illinois River Railroad Company taking one-third, and for the payment to the Chicago & Illinois River Railroad Company of 30 per cent. of the gross earnings from other traffic.

"The authority above mentioned authorized the board to incur such obligations for the Chicago & Illinois River Railroad Company as might, under the circumstances, be necessary.

"In pursuance of such authority the board directed the guarantee by your company of the coupons attached to 700 7 per cent. currency thirty-year bonds for \$1,000 each. The payment of the bonds and coupons was secured by a mortgage of the rental to be paid to that company, and certain coal lands. Afterward, by agreement, the amount of the coal lands embraced in the mortgage was reduced, and the Chicago & Illinois River Railroad Company retired and canceled 226 of the bonds above mentioned and the coupons thereto attached, leaving 474 bonds outstanding.

"The road has been put in running order and is now operated by your company; but sufficient time has not elapsed for the development of the coal fields on the new line to produce much additional coal traffic.

"We are, however, well satisfied that the increase of traffic and other advantages resulting from the operation of that line by your company, will fully compensate you for all that is to be paid for its use.

"By an agreement entered into in November last, between the Chicago, Pekin & Southwestern Railroad Company, the Chicago & Illinois River Railroad Company and your company, the first named company was granted the right to run its trains over the new line upon payment of its proportionate share of the interest on the value of the road, and the expense of keeping the same in repair.

"The amount to be paid by the Chicago, Pekin & Southwestern Railroad Company is not to be less than one-fourth of the interest and expense of repairs and taxes, and is not to exceed one-half of these amounts.

"The last named company is not to have the right to do any local business upon the line of the Chicago & Illinois River Railroad Company, and will not interfere with coal traffic from the Wilmington coal fields.

"The bridge over the Mississippi River at Louisiana being owned by your company, the basis for a division of earnings between your road and bridge in case of traffic passing over both, has been, for convenience and uniformity, arbitrarily assumed to correspond with the minimum charges made at other similar bridges over that river. The mode of keeping the accounts shows that the bridge earned, from passenger traffic, \$68,598.55; from freight traffic, \$55,000, making an aggregate of \$123,598.55. Deducting operating expenses and repairs, \$4,903.60, leaves \$118,694.95, or 7 1/4 per cent. on its cost.

"Continued experience in operating the leased lines confirms their estimated value to your company. The traffic over them has been reduced, in comparison with that of the preceding year, in about the same proportion and for the same causes as that over your main line.

"The gross earnings upon your lines during the past year were less than for any year since 1868. The receipts from passenger traffic were less than in any year since 1867. If the reduced earnings had been due to the opening of new lines competing with yours, or to any cause of a permanent character, it would lead to serious apprehension as to the future value of your property, but to all who have been well advised as to the crops during the last two years in the country traversed by your lines, the cause of this large decrease in earnings is apparent.

"The large reduction in passenger receipts results to a considerable degree from the general prostration of business throughout the country. But the number of passengers, as well as the amount of freight transported, has been largely reduced by the successive short crops.

"In 1873 the crop of corn was about one-half the usual quantity, and furnished to your line for transportation in 1874,

8,529,010 bushels, the amount transported the preceding year being 11,207,377 bushels. In 1874 the corn crop was in many sections almost an entire failure, and furnished for transportation in 1875, 4,929,991 bushels, or about 45 per cent. of the average of preceding years.

"Upon the corn crop of the preceding year depends not only the amount of corn to be transported, but also the number of cattle and hogs.

"As it has been before stated, the passenger traffic in 1875 was 95 11-100 per cent. local, and was largely reduced in amount in consequence of short crops.

"The reduction in passenger receipts and the loss of receipts from the transportation of corn alone (compared with those of the preceding year) amount to a sum only \$12,000 less than the entire reduction of receipts for the year, and the loss on the transportation of corn, cattle and hogs far exceeds the entire loss for the year. If the comparison is made between the amount of corn transported in 1873 (the crop of 1872 being no greater than an average) the loss on the transportation of corn alone is found to be \$520,115, which sum exceeds the entire reduction of receipts in 1875, compared with 1874 by \$50,651.

"The coal traffic in 1875 shows an increase of 163,907 tons, or nearly 20 per cent. over that of the preceding year.

"It is gratifying to observe that with an increased tonnage of freight transported, and more than an average amount of repairs and renewals charged in that account during the year, the operating expenses are less than in any year since 1868. The accounts for the last year show much that is encouraging in relation to future traffic.

"Perhaps the best index we have of the progress of improvements in towns and upon farms where people rely upon your railway for transportation is in the comparative amounts of lumber transported for building purposes.

"The amount transported in 1875 was 84,443,440 feet, which exceeds that in 1874 by 12,016,440 feet, and that in 1873 by 3,846,223 feet. In many other articles transported there was an increase compared with the preceding year.

"The crops in 1875 were larger than for several years past. Your road and equipment has been in all respects maintained in first-class condition, and your directors are confidently expecting better results from the traffic of the present year."

Transportation in Congress.

In the Senate on the 6th:

Mr. Dorsey, of Arkansas, introduced a bill to amend the Pacific Railroad act of July 1, 1862. The bill asserts in a preamble that the Central Pacific Railroad Company has improperly increased its capital stock, its interest-bearing securities, and the liabilities for or on account of branch roads, steamboat lines, and other properties without authority of Congress, and without a corresponding increase in the value of its real and personal property, and that such action is designed to prevent or postpone for a long time any action on the part of the government in fixing tariff rates, as the eighteenth section of the law of July 1, 1862, authorized, whenever its net earnings should exceed ten per cent. upon the actual cost of the road between Ogden and Sacramento. The bill, therefore, proposes to restrain the issue or sale of any more obligations of the company, secured by the mortgage upon the main line, or the land granted by the United States to aid in its construction. The bill also requires a detailed statement of all the company's receipts and expenditures up to Dec. 31, 1875, to be filed with the Secretary of the Interior, and provides that the net receipts shall be applied, first, to the payment of the interest on the first-mortgage bonds on the main line, and the creation of a sinking fund; second, to the payment of interest on the bonds alleged to have been issued, and thus secured without authority, and third, to the purchase and retirement of all the last-described class of bonds. Finally, it is made the duty of a commission, consisting of the Attorney General, the Secretary of the Interior and three citizens to be named by the President of the United States, to see that the foregoing provisions are carried into practical effect. Referred to the Committee on Claims.

Mr. West, of Louisiana, gave notice that on Wednesday the 8th, he would call up and make some remarks on the communication of the Secretary of the Treasury in regard to the propositions of the Pacific railroad companies to establish a sinking fund to retire their indebtedness to the Government on account of the Government bonds issued to them and the accruing interest thereon.

Mr. Windom, of Minnesota, presented resolutions of the Minnesota Legislature in favor of the construction by the Government of a double track freight railroad from the Atlantic to the Missouri, with a branch into Minnesota. Referred to the Committee on Railroads.

In the House on the 6th:

Mr. Jacobs, of Washington Territory, offered a bill to transfer lands of the Northern Pacific to the Seattle & Walla Railroad Company.

Mr. Slemmons, of Arkansas, offered a bill for a railroad from Norfolk, Va., through Virginia, North Carolina, Tennessee, Arkansas and the territories to the Pacific, and to incorporate the Atlantic, Oklahoma & Pacific Railway Company.

In the House on the 7th:

The bill declaring that lands heretofore granted to the Pacific railroad companies are subject to State taxation was passed.

Fast Time on the New York Central.

The special train with James Gordon Bennett and party, consisting of Engine No. 210, James Wood, engineer, one baggage car and one Pullman coach, left Niagara Falls March 1 at 8:21 a. m., and made the run to Syracuse in just two hours and 45 minutes, the distance being 158 1/2 miles. Deducting eight minutes for stoppages for water, four minutes at Eagle Harbor and four minutes at Palmyra, the distance was made in two hours and 37 minutes, including seven slow ups at dangerous places along the line. Not less than ten minutes were lost by these slow ups, competent persons so stating, the actual running time for the 158 1/2 miles may be placed at two hours and 27 minutes, that being the time that would have been made had nothing interfered to prevent its being made. The train arrived at Syracuse at 11:06 a. m.

From Syracuse the train was taken by Engine No. 280, Rembert Allen, engineer, and left at 11:15 a. m., reaching Albany at 2:27 p. m. This made the running time from Syracuse to Albany (excluding the two minutes for the stop at Utica) a distance of 147 1/2 miles, three hours and ten minutes. Of course several minutes were lost in passing through Syracuse, Rome, Utica, Amsterdam and Schenectady, more than enough to make the actual running time at the rate of a mile a minute.

Trial of the Loughridge Air Brake.

The Baltimore American of March 1 says: "A highly important and interesting trial was made yesterday of the Loughridge air brake on a portion of the Washington Branch Railroad, near Alexandria Junction, during which a train of ten cars, engine and tender, running upon a level track at a speed of 42.6 miles per hour, was stopped within a distance of 569 8-12 feet, or in 46 feet less than the entire length of the train, and in 16 seconds' time. The results of the experiments were entirely satisfactory, and the stop was made without sliding the wheels. The judges of the experiments were Wm. H. Shook, Chief Engineer United States Navy; J. M. Hood, President Western Maryland Railroad; G. G. Foreacre, General Manager Orange & Alexandria Railroad, and E. W. Barker, of Baltimore.



Published Every Saturday.

CONDUCTED BY

S. WRIGHT DUNNING AND M. H. FORNEY.

CONTENTS.

ILLUSTRATIONS:	Page.	NEW PUBLICATIONS:	Page.
Buel's Interlocking Switch Signal.....	107	GENERAL RAILROAD NEWS:	
CONTRIBUTIONS:		Annual Reports.....	107, 112, 116
Mr. Buel's Interlocking Switches and Signals.....	107	Elections and Appointments.....	112
The Southern Pacific and the Central Pacific.....	107	Personal.....	112
EDITORIALS:		The Scrap Heap.....	113
A Bureau of Experimental Research.....	110	Traffic and Earnings.....	113
The Basis of East-Bound Rates.....	111	Old and New Roads.....	113
The Chicago & Alton Report.....	111	Transportation in Congress.....	109
Record of New Railroad Construction.....	111	Railroad Law.....	115
EDITORIAL NOTES.....	111	MISCELLANEOUS:	
		Information Concerning Tunnel Wrecks.....	111
		The Institute of Mining Engineers at the Exhibition.....	112
		Free Passes.....	116

Editorial Announcements.

Passes.—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

Addresses.—Business letters should be addressed and drafts made payable to THE RAILROAD GAZETTE. Communications for the attention of the Editors should be addressed EDITOR RAILROAD GAZETTE.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

A BUREAU OF EXPERIMENTAL RESEARCH.

A railroad man who has not felt the need of "more light" on various dark subjects relating to his occupation must have studied its science and art to very little purpose. Every engineer and master mechanic who does any thinking beyond, or rather below, his daily routine, is brought face to face with problems which, with the information in his possession, he finds insoluble. If he is a student, he soon learns that an extremely, or infinitesimally, small portion of the knowledge which he is in search of is contained in books, and that the information he wants must, like gold, be dug for, and then be washed and sifted and separated by various processes from the valueless material in which the precious substance is found imbedded. When this experience first comes to a person, his impulse is usually, if he be of an inquiring turn of mind, to rush into the field of experimental research, and go mining after truth on his own account. Those who are entirely inexperienced in such work are usually very much astonished to find the very great difficulties in the way of making such investigations, or rather of eliminating the exact truth in that way. If the experiments which have been made to determine the resistance of railroad trains were all recorded, it would afford one of the most dreary chapters of unsuccessful search after knowledge which could be written. Usually the problem of train resistances seems a very simple one. All that appears necessary is to attach some kind of a spring to the drawing attachment of a train or car which will indicate the degree of tension required to move it. It is very soon found, however, that the indications of such an instrument are so extremely variable and subject to such sudden fluctuations that it is impossible by simple observation to make a correct record of them. Similar difficulties are encountered in making other experiments, such as those made with the steam-engine indicator; those on the strength of materials, and in fact almost all investigations which a railroad man is called upon to make. Experiments which will be really valuable require in fact special training and fitness for that kind of work, and a novice is very apt to collect erroneous data, which will mislead instead of enlightening him and others.

Of the enormous advantages which would accrue to railroad companies if a series of exhaustive experiments were made by competent persons to elucidate such sub-

jects as those we have already referred to, and to determine the power required to draw various kinds of cars under different conditions, or the performance of engines, the properties of lubricants or the effect of springs on the track, and in the resistance of trains, and a dozen other subjects which could be named, there can be no doubt whatever in the mind of any person who has examined into these topics with any care. While it may be that railroad managers may not have fully realized how much they would gain by such researches, yet if their attention is specially directed to it they could, we think, be easily led to see the profit of such work. The great difficulty, however, is to have such work done by competent persons, and in such a manner as to be of real value. This was the trouble with the mechanical laboratory which at one time it was proposed to establish in connection with the Master Mechanics' Association, and which led those who at first advocated it to abandon the scheme. The enormous advantage which would result from periodical competitive tests of locomotive engines have been pointed out a number of times in these pages. Supposing now that it was proposed to make such a test, the natural question would arise, who would conduct it? It would involve much time and labor, so that it would be almost impossible, and certainly unreasonable, to expect to find competent persons who would undertake the work without compensation. In short, to have it done as it should be done, it would be necessary to employ one or more suitable persons to do the work and pay them for their services. Now, supposing it be recognized, and we think it must be, that such work to be well done must be under the charge of persons trained to do it, and who can not and should not be expected to work gratuitously, then it becomes necessary to provide the necessary money to meet such expenses. As the parties who would be benefited by such work are the railroad companies themselves, they obviously should bear whatever expense would be incurred. The cost of such work, if distributed among a considerable number of roads, would be so extremely small that there would, we think, be but little difficulty in getting the money to meet the necessary expenses, if it were once clearly shown that the work would be done satisfactorily. But who is to make the application to railroad companies for contributions for this purpose?

An individual interested in any particular line of research would, if possessed of the reserve which a competent person probably would have, be very unlikely to make personal application of this kind; and if he should, a railroad officer would in all probability and very properly ask "Who are you, and what are your qualifications for doing what you ask us to pay for, and what assurance can you give that the money will be expended wisely, and who will audit your accounts?" These questions would quite naturally occur to all managers of railroads applied to, and would be so difficult for any one person to answer satisfactorily that it would, we think, make it quite impossible to secure any general co-operation among railroad men in sharing the cost of such investigations. Before railroad managers would feel sufficient confidence to contribute money for such a purpose, it would be necessary to provide some responsible head as to whose capacity and integrity there could be no question. Such responsibility could be secured, we believe, by the appointment of a committee by, say, the Master Mechanics' Association, or the Society of Civil Engineers, if the latter Association could be induced to forget its "policy" and "by-laws" long enough to undertake any such useful work. There is this difficulty, however, that the members of a committee of this kind would in all probability be quite unable to give the requisite time and work required to make such investigations as we have indicated. A competitive trial of locomotives would require that weeks and possibly months should be devoted to it, and other investigations to be thorough and exhaustive would require an equal or greater amount of time. It would therefore be impossible for the members of a committee who were actively engaged in any other occupation to devote the necessary time to such experiments and investigations. They might, however, employ one or more competent persons to do such work under their own supervision and direction. If a committee of this kind, made up of persons whose ability, reputation and integrity would command the confidence of railroad managers, was appointed to conduct experimental researches in matters relating to the practical operation of railroads, it could in the first place determine what kind of investigations and experiments are most needed, and the direction in which such work would be most profitable. This alone is very important, because there is very apt to be a great waste of time, money and labor in such work if these are not employed in the right direction. Such a committee could also determine the conditions and establish rules for making such investigations, and then select and employ the most competent person whose services could be procured to conduct and superintend the work. He would report to the committee and be subject to their control. They would direct the expenditure of money, audit his

accounts and assume the responsibility and make reports of all that is done. By this means different persons who are experts could be selected for making experimental investigation of subjects concerning which information is needed by railroad companies, and which possibly have been subjects of special research by those selected to elucidate them still further. Such a plan would secure the ablest men in the different departments of railroad engineering, who, when they began the work would have more knowledge of the subjects to be investigated than any one else, and would therefore work at an immense advantage over those who have no such preliminary information.

A committee of this kind would, we believe, if properly constituted, command the confidence of railroad managers, so that they would not have the fear that money contributed ostensibly for the purpose of scientific and practical research would be foolishly or corruptly wasted, but would be expended for the purpose for which it was contributed. With 75,000 miles of railroad, an annual contribution of say a few cents each year for each mile of road would yield a fund which would probably be as great as could be employed to advantage by the committee on its first organization. Of the profit of such an outlay there cannot, we believe, be any doubt whatever; and we also think that a large proportion of railroad managers could be made to see the advantages thereof. In Europe, especially in Germany, the investigations which are being made ought to be a cause of humiliation to American engineers, if the work done there is compared with that done here. Any one unfamiliar with what has been done there can learn something about it by attending the monthly meeting of the Master Car-Builders' Association next week, of which a notice will be found in another column, where Mr. Charles Bender will give some account of some researches which have been made there on the life of car axles. There researches of that kind are under the direction of government commissioners, which is of course impossible here, so that we are dependent for such work either on some one company or upon some co-operative effort such as we have proposed.

It is quite true that a number of railroad companies have made quite extensive investigations for their own advantage. This has been notably the case on the Pennsylvania Railroad. The results, although not kept secret, are not published, and instead of being of advantage to all, they go into the archives of the company, and will there probably pass into oblivion.

The scheme we have proposed has been suggested by a recent visit from Mr. P. H. Dudley and also by several other interviews with different persons interested in scientific research into the secrets of railroad economy. Mr. Dudley was formerly division engineer on the Allegheny Valley Railroad, but for some months past he has been engaged in making experiments with a registering dynamometer on the resistance of trains. He has had a dynamometer constructed at his own expense and has made all the experiments without compensation. The instrument which he has employed makes a continuous record on a roll of profile paper. These records already indicate some very valuable information, and show some things which are quite unexpected, and of which we hope to publish a full account at some future time; but to make the investigations will require much more time and labor. Now it is evident that unless a person is wealthy it is impossible to continue such experiments, and, to use a common phrase, "work for nothing and board himself." The result is that Mr. Dudley's experiments must probably be abandoned unless some railroad companies will assist in bearing the expense of making them. We have also a communication from a well-known mechanical engineer who experimented with an exhaust valve and the use of counter pressure in the cylinders to arrest the motion of a locomotive and thus act as a brake. He also was unable to complete his experiments for the want of suitable facilities for continuing them. We could enumerate many other similar cases, in which knowledge, as it were, was suffocated before it had strength enough to maintain itself.

It is, of course, true that there are numberless visionary schemers who are always importunate to have their schemes tried. To do so would, in most cases, be a waste of time and labor, and probably of money. Such a committee or board of experiment would form an authority which would be competent to determine whether a subject was worthy of investigation, and if application was made to it, it would of course be right and proper that its members should demand a statement of the reasons for making an investigation. Often it will be found that the subject has already been investigated and the fallacy involved therein exposed. The committee would thus serve as a sort of sieve to catch humbugs which would venture into it, very much to the relief of many railroad officers and editors of technical papers.

We would be glad to receive communications relating to this subject, or to publish discussions relating thereto.

THE BASIS OF EAST-BOUND RATES.

The managers' meeting on the 1st inst., which was attended by representatives of all the trunk lines, resulted in an agreement concerning the basis of rates which seems likely to secure harmony among the railroad companies and probably, on the whole, greater satisfaction among shippers from different competing points in the Northwest. The meeting was not for the purpose of making rates, but to decide upon the differences in rates from and to different points. This was settled in the simplest possible manner. On east-bound traffic the basis rate is to be that from Chicago to New York; and the charges from all other competing points in the Northwest to the four chief seaports are to be at the same rate per mile, or at least not at a less rate. Virtually, this is an agreement that all through traffic from the West to the seaboard may be charged the same rate per ton per mile. The Chicago-New York rate being known, the lowest permissible rate from any other competing point in the Northwest to Boston, New York, Philadelphia or Baltimore may be found by ascertaining the length of the shortest all-rail line by which the shipment can be made. Boston being 1,007 miles from Chicago and New York 913, the Chicago-Boston rate will be 1,007-913 of the Chicago-New York, or 1.103 times the latter rate. So by multiplying the New York rate by 0.9 we find the Philadelphia rate; by 0.876, the Baltimore rate.

The recent tariffs had been made nearly, but not exactly, on this basis; at least, so far as rates from Chicago to Philadelphia and Baltimore are concerned; but previous to December last the rates to these ports and since that time the Boston rate differed from the New York rate by an arbitrary amount. Whatever the New York rate might be, the Boston rate was five cents higher per hundred pounds on fourth-class freight, and the Philadelphia and Baltimore rate five cents lower. Now not only are differences dissimilar, but they are variable. For instance, if the New York rate should be 80 cents, the Boston rate would be 85 cents; but should the New York rate be only 30 cents, the Boston rate would be 33.1 cents, the difference being 3 cents in the one case and 3.1 in the other. So the Baltimore rate, with the above New York rates, would be 70 cents and 26 cents, respectively; whereas by the old custom they would have been 75 and 25. The amount of the difference thus becomes exactly proportional to the amount of the rate.

With the present grain rate of 40 cents per hundred from Chicago to New York, the lowest permissible rates become: Boston, 44.12 cents; New York, 40 cents; Philadelphia, 36 cents; Baltimore, 35 cents. At all the ports except New York the railroads delivering the grain have been accustomed to give rebates, sometimes as much as five cents per hundred, on all grain exported. This rebate is to be modified, and in most cases decreased; but a most important feature of the agreement with regard to export grain is that the through rate by rail and ocean steamer from Chicago to Liverpool shall be the same by way of all the ports. This puts Boston, New York, Philadelphia and Baltimore on an equality, so far as grain exports by steam are concerned.

This basis extends to all competing points in the Northwest, and gives a rule for determining the differences between the Chicago rate and that to the interior competing points farther South, concerning which Chicago shippers have been much exercised of late. Generally, we may say, points near the line between Illinois and Indiana will have rates as low as the Chicago rate, and for points in Southern Illinois the Baltimore rate will be materially lower than the New York rate.

The Illinois towns from which the distance to New York is as short as from Chicago (the shortest line from Chicago being 913 miles) are: Watseka (907 miles), Danville, (910), Paris (916), Marshall (915). Far to the south Lawrenceville, at the junction of the Paris & Danville with the Ohio & Mississippi, is ten miles nearer than Chicago to Baltimore. Generally, we may say, the competing points near the east border of Illinois may have on this basis rates as low as those from Chicago. From the chief centers of Western traffic the distance (and the lowest permissible rate) is equivalent to the Chicago distance (and rate) multiplied by the following: Milwaukee, 1; Indianapolis, 0.9; St. Louis, 1.15; Peoria, 1.103. The Milwaukee rate is determined by the Detroit & Milwaukee route, 90 miles of which is water, but which is open all winter usually. The Indianapolis grain rate accordingly, with the present 40 cent rate from Chicago, should be 36 cents, the Peoria rate 44 cents, and the St. Louis rate 46 cents, plus whatever arbitrary rate may be paid the Bridge Company.

The rates recently have been made very nearly on this basis; but it is the intention to have it adhered to strictly as a limit. The rates per ton per mile may be higher but may not be lower than the Chicago rate. Chicago affords a larger traffic than any other place, and the cost of carrying may reasonably be supposed to be less than for places affording a less traffic. They should not complain if they get as low a rate per ton per mile as that from the greatest

centre of traffic, where cheap freights by water reduce the rail rate to the minimum.

The union of all the trunk lines in this agreement and their apparently cordial assent to this basis render more than usually improbable any competitive contest during the present year. Rates are low, and a cut would leave no margin for profit. A confirmation of this conservative tendency is the circular recently issued in New York by all the trunk lines by which special contracts are forbidden. No reduction of the regular rates is to be permitted in any manner, direct or indirect. Certainly with west-bound rates as low as they now are, no shipper should complain, and probably none will except those who wish to secure an advantage over their competitors in business by help of special rates from the railroads.

The Chicago & Alton Report.

The Chicago & Alton Railroad has had a series of adverse circumstances to contend with of late years. The position of its main line with a great city at each terminus enables it to command a large traffic at almost all times, and probably serves to give it a more than usually even division of traffic in the two directions; and it has special advantages as a coal-carrier, the chief supply of bituminous to Chicago coming from its lines, besides that of the country on its lines. But where seven or eight years ago it had a broad territory for which it was almost the sole carrier, now there are half a dozen cross lines competing for the traffic. When lake rates were high these had a formidable effect in diverting traffic, and of late years, when lake rates were low and the competition less formidable, the crops on this line have been exceptionally poor. Last season, however, there were excellent crops, and the road is likely to have a heavy traffic again, though rates will probably continue to be low. The earnings of the road last year were the lowest since 1868, though it worked 65 miles in 1875 against 431 in 1869. The gross earnings per mile in that time have fallen from \$10,862 to \$7,164, or nearly 35 per cent. This, however, gives an exaggerated impression of the decrease; for most of the new mileage is of roads that were never expected to equal the old road in earnings, and would have been entirely successful with half those earnings. The earnings were largest in 1873, when the mileage was the same as last year. Then they were at the rate of \$8,459 per mile; and the decrease since has been at the rate of 15 per cent. The decrease in net earnings, however, has been nothing like this. These were \$3,450 in 1873 and \$3,158 in 1875, the falling off being only 8 1/2 per cent.

The surplus net earnings, after paying interest and rentals, amounted to 8 1/2 per cent. on the capital stock in 1875, against 10 1/2 in 1874. The dividend, which was 10 per cent. for nine years previously, was reduced to 8 per cent. last year, accordingly.

This road gets a share of the Kansas business, which is sometimes valuable, and a larger one of such of the business of the growing Southwest as goes as far north as Chicago. But the traffic from whose future development it has most to hope is the bituminous coal in the vicinity of Wilmington and Streator. The consumption of this for domestic purposes will grow only with the population, probably, but an immense consumption in manufactures may reasonably be expected, and this may grow very rapidly so soon as there is a return to business activity in the country.

Record of New Railroad Construction.

This number of the Railroad Gazette has information of the laying of track on new railroads as follows:

Delaware & Bound Brook.—Extended from Hopewell, N. J., southwest to the Delaware River at Yardleyville, 11 miles, completing the road.

Laurens.—Extended from Martin's S. C., to Clinton, 3 miles.

Hot Springs.—Extended 1/2 mile to Hot Springs, Ark., completing the road, which is 21 1/2 miles long and of 3-foot gauge.

St. Louis, Keokuk & Northwestern.—Track is laid for 7 miles southeast from Hannibal, Mo., on the extension to Louisiana.

Wyandotte, Kansas City & Northwestern.—Extended east 6 miles to Buckner Hill, Mo. It is of 3-foot gauge.

This is a total of 27 1/2 miles of new railroad, making 252 miles completed in the United States in 1875.

THE PENNSYLVANIA RAILROAD REPORT, only a brief summary of which we are able to publish this week, chronicles the lowest average receipt and expense for carrying freight, we venture to say, in the whole history of railroads. On the Pennsylvania Railroad proper—the line from Philadelphia to Pittsburgh with its branches—the receipt per ton per mile in 1875 was 1.058 cents and the average expense 0.616 cent. On the Philadelphia & Erie—a line with steep grades—the average receipt was 0.865 cent and the average expense 0.571 cent. The Pennsylvania proper is one of the largest carriers in the world, and the extremely low rate to which it has reduced the cost of transportation is worthy of note. On the other trunk lines for the year ending with September last the expense was much greater. Putting the three whose figures are known (the Baltimore & Ohio does not report) side by side we have:

	Receipt.	Expense.	Profit.
Pennsylvania.....	1.058 cts.	0.616 ct.	0.442 ct.
Erie.....	1.200 "	0.949 "	0.250 "
New York Central & Hudson River.....	1.275 "	0.759 "	0.516 "

On the Erie, therefore, the expense seems to have been 54 per cent. more, and on the New York Central 23 per cent. more than on the Pennsylvania. If the Erie could have been worked as cheaply (it certainly cannot be until it is greatly improved), its net earnings last year would have been greater by more than \$3,380,000.

The effect of the competitive war of last year is shown in the average receipt, 16 per cent. less on freight and 3 1/2 per cent. less on passengers per mile than the previous year.

THE NEW YORK ELEVATED RAILROAD COMPANY has had its route on the east side of the city, through the Bowery and Third avenue, approved by the Commissioners appointed to hear the objections of property-owners on the line. They disapprove of the proposed line on Eighth avenue alongside Central Park, and the proposed connection between Eighth and Ninth avenues on Ninety-second street; but the way is clear for an extension from the present terminus at Sixtieth street up Ninth avenue. The decision of the Commissioners is to be submitted to the Supreme Court, and if it is confirmed there would appear to be no legal obstacles to the construction of an east-side road to the Harlem River, and the company announces that it will be ready to begin work at once and complete a line from South Ferry to the Grand Central Depot with a branch to the City Hall by next January. The road now in operation has a growing traffic, the number of passengers carried monthly having been:

	This year.	Last year.
December.....	144,105	137,716
January.....	165,286	168,037
February.....	183,446	165,996

Thus there was an average of 465 passengers daily in December, 533 in January and 632 in February of last winter, with no increase of road; and there is every prospect that it will soon have more work than can be done on a single-track road.

THE MARCH MEETING OF THE MASTER CAR-BUILDERS' ASSOCIATION will be held at the rooms No. 113 Liberty street, New York, Thursday evening, March 16. Mr. Charles Bender, C. E., will give an account of the results of experiments on the life of railroad car axles and springs, made in Germany by Mr. Woehler, Commissioner of the German State Railroads. A discussion will follow the remarks of Mr. Bender.

NEW PUBLICATIONS.

Financial Review of 1875.—This is an annual publication of the well known and trustworthy Commercial and Financial Chronicle, and may be presumed to be prepared with the care and intelligence that characterize that excellent paper. It begins with a short history of the business of the money market during the year, in which are given the prices at the beginning of each quarter of several of the leading exports, values of imports and exports, New York Clearing House quarterly statements for two years, ruling interest rates for call loans and prime paper for every week; sketches of the prices of gold, foreign exchange and United States, municipal and railroad bonds, and of railroad stocks. Detailed statistics of imports and exports are given, of both quantities and values, for the fiscal year ending with June last, and a separate statement of New York commerce for the calendar year. Then follow statistics of banking, of failures, valuable tables of prices for five years of leading exports and imports; railroad statistics giving stock, debt, cost, passenger earnings, freight earnings, total earnings, working expenses, net earnings and rate of dividend of "representative railroads" in each section of the country for three years; a table of United States land grants; the elaborate and valuable account of "Railroads in Default since the Panic of 1873" which was published in the Chronicle in January, and which we have mentioned heretofore; a few railroad earnings for 1875; a number of tables for investors; a brief account of the processes and phraseology of stock speculations; prices of gold since 1861, and tables of prices of United States, State and various railroad securities each month for several years,—railroad securities for four years. It closes with the quite elaborate review of cotton and cotton spinning in the United States for the last cotton year which appeared in the Chronicle. The matter so collected is that part of the contents of the Chronicle which most of its readers require for future reference, and it is here easily accessible. Altogether it makes a volume of 64 pages like those of the Chronicle.

Information Concerning Tunnels Wanted.

Mr. Henry S. Drinker, an engineer who has for some time made a special and most extensive study of the subject of tunnels, and has moreover had profitable experience in connection with them, is preparing a work on American tunnelling which is intended to be as complete as possible. By the circular printed below it will be seen that Mr. Drinker solicits the contribution of materials bearing on the subject by engineers or others who have or may have data which may serve to illustrate the history or the methods of American tunnel construction. Mr. Drinker issues this circular after having collected all the material, printed or otherwise, which he has been able to find after months of research, and securing the assistance of a large number of engineers who have had experience in this special field. There is doubtless a great deal of information on the subject which remains buried, as it were, and can only be brought to light by the act of the individuals possessing it. Ordinarily, they cannot make known this knowledge without considerable labor. Mr. Drinker's enterprise gives them an opportunity to do so with the slightest effort on their part and the greatest benefit to the engineering profession. His qualifications for the work are excellently demonstrated by his paper on the Musconetcong Tunnel (written while he was resident engineer of that work), read about a year ago before the Institute of Mining Engineers, and published in the Railroad Gazette of June 5 and June 12 last year (pages 227 and 239). The assistance of the persons to whom the following circular is directed will make practicable a work of exceptional value:

PHILADELPHIA, Pa., March 6, 1876.

The subscriber is engaged in preparing a general treatise on American Tunnelling, to show both our record in the past and the present methods in vogue.

No work of the kind has ever been compiled in America, and the only English record is Mr. Simm's account of the method adopted in the construction of two tunnels in 1844.

For every new tunnel that is started, engineers are generally put to a vast amount of unnecessary trouble in looking up records of tunnels wherever they may be found, so as to determine on the most advisable cross-section to adopt, if in

rock; and what thickness of masonry has been deemed advisable in soft ground, what rate of progress has been attained in various materials, and at what cost, etc., etc. Except in the case of a few isolated papers read before our engineering societies, there are no authentic printed records attainable.

Among those read before the American Society of Civil Engineers, may be cited, "Tunnels of the Pacific Railroad," by Jno. B. Gillis, Esq., "Sketch of the Detroit River Tunnel," by E. S. Chesbrough, Esq., and "Nequehoning Tunnel," by J. Dutton Steele, Esq. Also a paper was read in February, 1876, before the American Society of Mining Engineers, on the "Musconetcong Tunnel" (Lehigh Valley Railroad Extension), by the subscriber.

Now if engineers throughout the country will assist in the work of collecting data, and will kindly forward any facts in their possession, the combined information, if properly collated and arranged, would be of much value. To this practical record of American work will be added a condensed record of the history of European tunnelling, now being prepared abroad, with tables showing the location, length, cost, rate of driving, machinery used, etc., etc., in the construction of the principal tunnels abroad. Returns of South American work have also been applied for, which will be especially interesting, owing to the little that is specifically known of the heavy work done there of late years.

Will you kindly assist in the work, by sending any data, never mind how small, or in what shape, you may have and can conveniently forward?

Should you desire it, their safe preservation and return will be guaranteed on receipt. Appended please find a general scheme of the subjects treated, it being proposed to cover not only large railroad tunnels proper, but also mining adits and drifts, canal and water-supply tunnels, etc., etc., the work to be ready for press probably during the summer or autumn of 1876.

Any facts bearing even remotely on the subject will be most acceptable.

Yours, respectfully,

HENRY S. DRINKER.

Any data solicited concerning railroad tunnels, or mining tunnels, headings and drifts, as to their,

1. Location, length, date, time occupied in building, etc.
2. Names of engineers and contractors.
3. Nature and characteristics of material passed through.
4. Cross-section adopted through rock where self-supporting, and if loose, method of timbering and cross-section of masonry.
5. If through rock, whether top or bottom heading driven, with rate of progress and size of heading, whether driven by hand or machine labor. If by hand, number of hammers generally employed on a shift, and number of shifts per day preferred. If by machinery, what make of drill and compressors adopted.
6. If drilling by hand or machine labor, estimate of cost per cubic yard or lineal foot or both, of heading and enlargement. If work commenced by hand labor and machinery subsequently put in, relative rate of advance, and relative cost.
7. What explosive used, and any details as to amount burnt per cubic yard of rock broken in heading and enlargement.
8. Manner of working, and rate of advance of enlargement in rock.
9. If through soft ground, (i. e. clay or deposit) size, rate of advance and manner of driving, timbering, etc., preliminary (top or bottom?) headings, with details of subsequent enlarging and arching. Cross-section of masonry adopted. Description of stone, brick or cement used.
10. Final grades and drainage adopted.
11. If shafts or slopes used, any details concerning their sizes, material passed through, rate of progress, etc.
12. What depth of open cut deemed advisable at either extremity (rock or earth cut?) before beginning to tunnel.
13. Price paid, or final cost, per cubic yard, of tunnel and shaft excavation.
14. Price paid, or final cost, per cubic yard, of tunnel masonry.
15. Total final cost of work.

Lastly, if this should reach the hands of any gentleman not personally connected with tunnel work, any information whatever, bearing even most remotely on the subject, is requested; i. e., the locality of any tunnels, naming the railroad or mining district, so that specific information may be sought. Or reference to any publications on the subject of tunnelling, whether in scientific periodicals (American or foreign), or even in the daily papers. Address,

HENRY S. DRINKER, Mining Engineer,
No. 1,906 Pine street, Philadelphia, Pa.

The Institute of Mining Engineers at the Exposition.

The Centennial Committee of the American Institute of Mining Engineers, consisting of Eckley B. Cox (Chairman), Thomas Eggleston, J. S. Alexander (Treasurer), R. W. Raymond, Wm. G. Neilson (Secretary), has issued the following circular:

The city rooms of the Institute at No. 1,123 Girard street, Philadelphia, will be open day and evening, from April 1 to Dec. 1, 1876, for the use of members and associates, and of other persons, citizens or foreigners, properly introduced. Arrangements are also in progress to secure a headquarters for the Institute within the Centennial Grounds; but the special purposes of the city rooms are such as could not be so well served by accommodations exclusively in the Exhibition.

These rooms are intended to be:

1. A center of social reunion for all members and associates in the city.
2. A convenient resort for foreign engineers, metallurgists, geologists, etc., desirous of meeting their American colleagues or of obtaining information and assistance in their study of American resources and industries.
3. A repository of statistical and other information concerning the mining, metallurgy, geology and geography of the United States, which can be consulted by members or guests, in connection with the study of these subjects in the Exhibition.

4. An agency and directory for the convenience of members and guests in arranging tours, forwarding letters, storing packages, etc.

To carry out these plans the Committee has secured, at the above address, a suite of apartments, comprising three rooms on the ground floor, a room in the second story, and a room for storage in the basement. These will be suitably furnished and attended, and provided with the daily journals, scientific periodicals, geological and professional reports, maps, portfolios of drawings of machinery, descriptions of works, guide books, railway tables, etc., for consultation; besides which, the Secretary will be prepared to furnish information, advice and letters of introduction to members or guests interested in special lines of professional inquiry, whether in the Exhibition itself, or in the country at large. It is probable that besides the ordinary social and professional use of the rooms, meetings for informal discussions will be held in them on one or two evenings of each week. A register of the addresses and movements of members and guests will be kept, so that the present or prospective address of each may be known at any time. If it shall prove desirable, a copy or abstract of this register, or so much of it as shall show the addresses from day to day of mining engineers, metallurgists, geologists, etc., present in the city, will be kept at the headquarters of the Institute in the Exhibition. In connection with this registry, the Committee will receive and forward letters, and store baggage, specimens,

etc., at the order of their owners—these facilities being extended to all members and associates of the Institute, and others who shall have become entitled by proper introduction to the privileges of the rooms.

General Railroad News.

ELECTIONS AND APPOINTMENTS.

Chicago, Burlington & Quincy.—The new board met in Boston, March 2, and elected the following officers: President, Robert Harris; Vice-President, C. E. Perkins; Chairman of the Board, J. N. A. Griswold; Counsel, J. M. Walker; Secretary and Treasurer, Amos T. Hall; General Superintendent, W. B. Strong; Western Executive Committee, Robert Harris, J. M. Walker, C. E. Perkins; Executive and Finance Committee, J. N. A. Griswold, J. M. Forbes, Sidney Bartlett, Charles J. Paine. Mr. Harris has been General Superintendent for some time. Mr. Perkins was formerly General Superintendent and then Vice-President of the Burlington & Missouri River. Mr. Strong was formerly Assistant General Superintendent and has lately been General Superintendent of the Michigan Central.

New Castle & Franklin.—The officers of this company are as follows: Cyrus Clark, President and Treasurer; George C. Reis, Vice-President; J. M. Power, Secretary and Auditor; A. Vandiver, Superintendent. The offices are at New Castle, Lawrence County, Pa.

Southern Pacific.—Mr. R. M. Garratt has been appointed Freight Agent Northern Division, office at San Francisco, Cal.; C. F. Smurr, Freight Agent Los Angeles Division, office at Los Angeles, Cal.

Grand Rapids & Indiana.—At the annual meeting in Grand Rapids, Mich., March 1, the old board was re-elected, as follows: W. O. Hugbart, H. I. Hollister, Grand Rapids, Mich.; I. G. Waite, Sturgis, Mich.; Pliny Hoagland, F. P. Randall, Fort Wayne, Ind.; Mancel Talcott, Chicago; J. N. McCullough, Thos. D. Messler, Wm. Thaw, Pittsburgh; John P. Green, George B. Roberts, Thomas A. Scott, Philadelphia; Robert B. Potter, New York.

Colorado Central.—Mr. O. B. Lyford, General Superintendent of the Kansas Pacific, has been appointed General Superintendent of this road also.

Louisville Paducah & Southwestern.—Mr. T. J. Fitzgerald has been appointed Auditor in place of E. T. Calvert, resigned. His office is at Louisville, Ky.

Memphis & Little Rock.—Mr. John W. Goolwin has been appointed Treasurer, with office at Little Rock, Ark.

St. Paul & Pacific.—In accordance with the terms of the scheme of arrangement with the bondholders, the Amsterdam committee of the latter have designated the following persons to act as directors in the bondholders' interest: John S. Barnes and Henry M. Baker, of the iron firm J. S. Kennedy & Co.; A. G. Dulman, of Dulman & Schaff, bankers, and William H. Scott, of the law firm of Chapman, Scott & Crowell, all of New York.

Ohio & Mississippi.—Mr. C. Cole, formerly of the Toledo, Wabash & Western, has been appointed Superintendent of the Louisville Division of this road.

Memphis & Little Rock.—At the annual meeting in Little Rock, Ark., Feb. 16, the following directors were chosen: H. L. Brinkley, John D. Adams, S. R. Cockrell, Wm. H. Farrington, Colton Green. The board elected H. L. Brinkley, President; J. D. Darden, Secretary and Treasurer; M. B. Pritchard, General Superintendent and Engineer.

West Florida & Mobile.—The officers of this company are as follows: President, Thomas G. Wagstaff, New York; Vice-President and General Manager, E. M. Cheney, Jacksonville, Fla.; Treasurer, D. W. Hendrickson, New York; Secretary, Austin Stevens, New York.

Wisconsin Railroad Commission.—Governor Ludington has appointed Mr. Dana C. Lamb Railroad Commissioner under the Vance law, which provides for one instead of the three which formed the Commission under the Potter law.

Chicago, Rock Island & Pacific.—From March 1 and until further notice, the Baggage Department of this road will be in charge of Mr. J. D. Marston, as General Baggage Agent. Monthly reports of extra baggage collections will be forwarded to E. St. John, General Ticket Agent, as heretofore. All other reports and communications relative to the Baggage Department should be addressed to Mr. Marston, at Chicago.

Cleveland, Columbus, Cincinnati & Indianapolis.—At the annual meeting in Cleveland, O., March 1, the following directors were chosen: H. B. Hurlbut, J. H. Devereux, T. P. Handy, L. M. Hubby, S. Burke, James Barnett, Amos Townsend, Cleveland, O.; B. S. Brown, Columbus, O.; R. M. Shoemaker, Cincinnati; Hugh J. Jewett, Herman R. Baltzer, F. L. Leland, Walton Ferguson, New York. The board is the same as last year's except that Mr. Ferguson takes the place of Stillman Witt, deceased. The board subsequently met and re-elected the following officers: J. H. Devereux, President; H. B. Hurlbut, Vice-President; George H. Russell, Secretary and Treasurer; George S. Russell, Assistant Secretary and Treasurer; E. S. Flint, General Superintendent; Frank Ford, Chief Engineer; Alfred Ely, Auditor and Registrar; Lucien Hills, General Freight Agent; S. F. Pierson, General Ticket Agent; A. J. Smith, Assistant General Ticket Agent; L. S. Young, Master Mechanic; Wm. F. Smith, Master Car Builder; E. C. Sheldon, Paymaster; The United States Trust Company, of New York, Transfer Agent.

Cincinnati & Springfield.—At the annual meeting recently the following directors were chosen: H. B. Hurlbut, J. H. Devereux, T. P. Handy, S. Burke, Amos Townsend, James Barnett, Cleveland; R. M. Shoemaker, M. C. Shoemaker, Cincinnati; Augustus Schell, New York. The board elected H. B. Hurlbut, President; M. C. Shoemaker, Secretary. The road is leased to the Cleveland, Columbus, Cincinnati & Indianapolis.

Keokuk, Galesburg & Chicago.—The first board of directors of this new company is as follows: Clark E. Carr, W. Selden Gale, O. T. Johnson, C. H. Matthews, John C. Stewart, D. H. Frisbie, Geo. W. Brown, A. Kitchell, B. F. Arnold, A. C. Clay, W. W. Washburn, J. N. Reece, B. Lombard, Jr., S. H. Ferris. The officers of the company are: C. H. Matthews, President; W. Selden Gale, Vice-President; O. T. Johnson, Treasurer; A. Kitchell, Secretary; M. H. Chamberlin, General Manager; C. Hamilton, Chief Engineer. The office of the company is at Galesburg, Knox County, Ill.

Indianapolis Freight Agents' Association.—This association was organized recently by the election of the following officers: A. J. Perkins, President; C. F. Holliday, Vice-President; H. S. Watson, Secretary and Treasurer.

Lehigh Coal & Navigation Co.—At the annual meeting in Philadelphia, Feb. 20, Mr. E. W. Clark was re-elected President, with the following board of managers: Francis R. Cope, Francis C. Yarnall, Fisher Hazard, Charles Parish, Charles Wheeler, George Whitney, Alexander Biddle, John Leisenring, James M. Wilcox, Edward Lewis, T. Charlton Henry.

Union Pacific.—At the annual meeting in Boston, March 8, the following directors were chosen: Oliver Ames, Elisha Atkins, Sidney Dillon, G. Dexter, Benjamin E. Bates, Oliver Ames 2d, James D. Smith, Charles J. Osborne, Samuel M. Mills, Jay Gould, Ezra H. Baker, S. H. H. Clark, Joseph Richardson, John Sharp and G. M. Dodge. Mr. Ezra H. Baker succeeds Ezra H. Baker, Sr., deceased, and S. H. H. Clark replaces George

O. Scott; the others are re-elected. The board re-elected Sidney Dillon, President; Elisha Atkins, Vice-President; E. H. Rollins, Secretary and Treasurer.

PERSONAL.

—Mr. Camille d'Invilliers, a prominent member of the Philadelphia Board of Brokers and a director of the Philadelphia & Erie, the Pittsburgh, Titusville & Buffalo and several minor companies, died in that city March 1.

—Mr. Samuel C. Hough, formerly General Passenger Agent of the Pittsburgh & Connellsville road, is now agent for Goodall, Nelson & Perkins' steamship line at Santa Monica, Cal., the sea-port terminus of the Los Angeles & Independence road. Mr. Hough has been residing at Santa Monica for several months past.

—Mr. J. L. Rogers has resigned his position as General Freight Agent of the Boston, Concord & Montreal Railroad.

—Mr. E. T. Calvert has resigned his position as Auditor of the Louisville, Paducah & Southwestern road.

—Mr. Thomas B. Stoddard, an old citizen and prominent lawyer of La Crosse, Wis., died in that city Feb. 24, aged 75 years. He was the original projector of the Southern Minnesota road and was President of the company from 1864 to 1871.

—Mr. N. C. Munson, a well-known railroad contractor, who has been engaged on a number of New England roads and now has a heavy contract on the Troy & Greenfield, is reported to have suspended payment. The amount of his liabilities is not known.

—Mr. H. D. Wallen, Jr., for several years past Superintendent of the Northern Division, Grand Rapids & Indiana Railroad, has resigned that position and bought the Michigan Iron Works in Grand Rapids, Mich., to the management of which he will devote himself hereafter.

ANNUAL REPORTS.

[For other annual reports see pages 107 and 116.]

Chicago, Burlington & Quincy.

The following is based on the President's report, which alone has been published as yet. It is for the calendar year 1875.

The company at the close of the year had added to their system by lease the new Albia, Knoxville & Des Moines Railroad, 33 miles long, making a total of 1,296.81 miles of railroad under its management, but the new road was worked but a few weeks in 1875, and the average mileage worked that year was 1,268. All the lines are virtually owned by the company, the rentals of leased branches consisting in every case, we believe, in the payment of the interest on the funded debt of those branches, the stockholders having absolutely no rights so long as this interest is paid. During 1875 the consolidation with the Burlington & Missouri River Railroad was completed, that company conveying to the Chicago, Burlington & Quincy all its property, though the organization of the former is maintained for convenience, and the shares in it exchanged for Chicago, Burlington & Quincy shares are held by trustees for the last-named company.

The following statement of capital stock account is given in the report:

The capital stock of the Chicago, Burlington & Quincy Railroad Company proper, at the date of the last report, was	\$19,898,910
It has been increased during the year by one share issued for fractional rights consolidated, and by 52,011 shares issued in exchange for Burlington & Missouri River Railroad stock, transferred to J. N. A. Griswold and J. M. Walker, trustees, for the purposes stated:	
Making the total of C. B. & Q. stock	\$25,100,110 00
Outstanding B. & M. stock at the date of last report was	\$6,749,102 76
This amount has been increased during the year by conversion of bonds into stock	722,600 00
For old subscriptions	100 00
For amount of discount of branch stock not heretofore entered in account; although issued in 1871	136,330 00
By payment in stock to old construction account prior to consolidation	15,349 75
Making total amount of B. & M. R. stock	\$7,613,842 51
Less old subscription of stock refunded	\$50 00
Amount of stock transferred to trustees as stated above	5,201,100 00—5,201,150 00
Total B. & M. stock outstanding	2,412,732 51
Making aggregate amount of stock outstanding on 31st ult. (\$21,213 per mile)	\$27,512,842 51
The funded debt of this company at the date of the last report, including the contingent indebtedness of its branch bonds and the bonds of the Burlington & Missouri River Railroad Company, was	\$27,381,075
This has been increased during the year—	
By sale of C. B. & Q. 7 per cent. of 1893	\$525,000
By sale of C. B. & Q. plain 5 per cent. of 1893	462,000
By conversion of fractional rights	2,900
	\$989,900
Less B. & M. R. bonds converted into stock	\$722,000
Less bonds purchased for C. B. & Q. sinking fund	18,000
Less Northern cross scrip paid	43,500
Less purchased B. & M. land-grant sinking fund	34,800
Less purchased branch bonds on traffic contracts	13,000
	\$831,300
Giving amount of bonds outstanding on Dec. 31st (\$21,213 per mile)	\$27,539,575

Of the Burlington & Missouri River bonds included in this statement, \$1,357,150 are convertible into stock, and are being rapidly converted. The balance of the Burlington & Missouri River funded debt consists of land-grant bonds, which at the close of 1875 was not \$200,000 greater than the land-grant sinking fund.

Per mile of road there is outstanding:

Capital stock	\$21,213
Funded debt	21,393
Total	\$42,606

The virtual cost to the company of the new Albia, Knoxville & Des Moines branch of 33 miles was a trifle less than \$14,000 per mile in 5 per cent. bonds, making the annual cost \$700 per mile.

The increase in funded debt during the year was \$58,500; the average interest based on the amount outstanding at the beginning of 1875 was about 7.36 per cent. The exchange of branch bonds bearing 8 per cent. for 7 per cent. bonds of 1890 tends to reduce this rate. The sale of its 5 per cent. bonds last year for 96.41 shows that with its present credit the company can borrow money on much better terms, and will be able to retire the outstanding debt at maturity with bonds drawing a lower rate of interest.

The construction account was increased during the year by \$894,886.10, a large part of which is the excess of cost of steel over iron rails and of iron and masonry over wooden bridges and culverts.

NAME: _____

exchanged for Danville, Urbana, Bloomington & Pekin first-mortgage bonds, \$2,200,000 for Indianapolis, Bloomington & Western firsts, and \$1,500,000 for Western Extension firsts.

2. Second-mortgage bonds to the amount of \$2,600,000 to bear 7 per cent. interest, to be payable for the first five years only if earned. Of these bonds \$1,500,000 to be issued to present holders of Indianapolis, Bloomington & Western second-mortgage bonds, and \$1,100,000 to holders of Western Extension firsts.

3. Common stock to the amount of \$3,675,000; \$600,000 to be issued for unpaid coupons on Danville, Urbana, Bloomington & Pekin firsts; \$900,000 for coupons on Indianapolis, Bloomington & Western firsts; \$825,000 to holders of Western Extension bonds; \$1,000,000 to holders of Indianapolis, Bloomington & Western second, and \$350,000 to unsecured creditors.

4. Scrip to the amount of \$6,257,550, to be convertible into stock whenever the road shall have earned and paid dividends amounting to 14 per cent. on the stock. Of this scrip \$2,475,000 to be issued to holders of Western Extension bonds; \$690,000 to holders of second-mortgage bonds; \$1,050,000 to unsecured creditors and \$1,902,550 to present stockholders.

This plan is nearly the same as the other one now pending, except that it includes the Western Extension in the reorganization. It is not likely to meet with favor except among the Western Extension bondholders.

Dallas & Wichita.

A contract for grading 17 miles of this road from Dallas, Texas, has been let to Mr. Brennan, who will put on a force of men at once. Contracts for ties have been already let. President Clarke has gone East to negotiate for iron and equipment.

East River Bridge.

At a meeting of the Trustees March 6, bids for the wire rope for the temporary bridge were opened. Five bids had been received, two from England, one from John A. Roebling's Sons, of Trenton, one from New York and one from Brooklyn. They were referred to the Executive Committee.

New York Elevated.

The Rapid Transit Commissioners who have been hearing objections of property owners to the proposed route have decided in favor of the company. The company's counsel has given notice that on March 15 it will apply to the General Term of the Supreme Court to confirm the Commissioners' report. If it is confirmed, the company will be able to proceed with the construction.

Louisville, Cincinnati & Lexington.

The Auditor, Mr. Wm. Mabl, reports as follows for the month of January:

Passenger receipts.....	\$37,439 70
Freight.....	38,465 72
Express, mail, telegraph and miscellaneous.....	6,729 84
Total earnings.....	\$82,635 26
Ordinary working expenses.....	\$50,216 23
Renewal of ties and rails.....	4,491 00
Total expenses (73.46 per cent.).....	60,707 23
Net earnings.....	\$21,927 73
State tax.....	\$1,491 25
Rentals and deficits.....	3,630 07
Construction.....	467 82
Louisville, Cin. & Lexington R. R. Co.....	500 00
	6,009 14
Balance of net profit.....	\$15,888 59

Which is added to the amount in the hands of the Receiver, subject to orders of the Court.

West Florida & Mobile.

This company was organized sometime since for the purpose of building a railroad from the present terminus of the Jacksonville, Pensacola & Mobile at the Apalachicola River westward through West Florida to the Alabama line and thence to the city of Mobile. The distance is about 200 miles, and there is to be also a short branch to Pensacola. No work has been done as yet, but arrangements are now being made for a survey of the line.

Bangor & South Haven.

This company has filed articles of incorporation in Michigan and purposes building a narrow-gauge railroad from South Haven, Mich., to Bangor, 11 miles. The capital stock is fixed at \$44,000.

Toledo, Wabash & Western.

Late despatches state that the Indiana Supreme Court has refused to admit the stockholders represented by the Protective Committee as parties to the foreclosure suit. There is now no obstacle to the completion of the foreclosure of the consolidated mortgage, which will be carried through without delay. On receipt of the news in New York the prior mortgages advanced from 1 to 5 per cent. in price.

St. Louis, Albia & Des Moines.

This is the name of the proposed branch of the Missouri, Iowa & Nebraska from Centerville, Ia., north to Albia. Surveys are now being made of the line, which is about 24 miles long. At Albia it will connect with the Central Railroad of Iowa, the Burlington & Missouri River and the lately-opened Albia, Knoxville & Des Moines road.

Pilot Knob & Mississippi.

It is proposed to build a narrow-gauge road from Pilot Knob, Mo., east by north to the Mississippi near St. Genevieve, about 45 miles, with a short branch from the main line to Iron Mountain. It is also proposed to continue this by building from a point on the Illinois shore opposite the Missouri terminus northward about 17 miles to the Cairo & St. Louis at Red Bud.

Chesapeake & Ohio.

The court has authorized Receiver Wickham to rescind a contract made by the company in 1873 for the purchase of a certain tract of land in York County, Pa.

The Pittsburgh Gazette says that arrangements are being made to send oil from that city to Huntington in barges and thence over the Chesapeake & Ohio to Richmond for shipment. The managers of that road have offered to give the refiners very favorable rates and the new route will probably be tried.

Helena & Benton.

A third proposition passed by the late Legislature of Montana provides for the construction of a railroad from Helena to Benton, the head of navigation on the Missouri. The distance is about 125 miles, following the general course of the Missouri. The act authorizes the counties of Lewis, Clarke, Chouteau and Meagher to issue bonds in aid of its construction to an amount not exceeding \$750,000.

Atchison, Topeka & Santa Fe.

It is reported that this company has made arrangements to lay a third rail on the Denver & Rio Grande branch from Pueblo, Col., to Canon City. There is also some talk of an extension up the Arkansas River and to the San Juan mining region by way of Saguache and the Cochetopa Pass.

Osage Valley & Southern Kansas.

The St. Louis Republican notes a report that some New York capitalists are endeavoring to purchase the franchise of the Osage Valley Railroad Company for the purpose of building the road in the form of a narrow gauge. The charter authorizes the construction of a road from Booneville to Spring-

field, and a considerable part of the proposed line has been graded and prepared for the ties. The object of the Eastern capitalists is to cross the river at Booneville, extend the road through Cooper, Boone, Callaway, Montgomery and St. Charles counties, recrossing the river at Howell's ferry, and running to St. Louis.

Keokuk, Galesburg & Chicago.

The managers of this projected narrow gauge road are making an active canvass for subscriptions and have arranged to begin the surveys for the road at once. The towns all along the line are urged to subscribe and the project is, apparently, exciting considerable local interest.

St. Louis, Keokuk & Northwestern.

The grading on the extension from Hannibal, Mo., southeast to Louisiana, is nearly completed and is expected to be finished by March 15. Track has been laid from Hannibal for seven miles and a large force is at work. Another force has lately been put on to lay the iron from Louisiana northwest.

The Central Vermont and Rutland Settlement.

The Central Vermont Company as Receiver and Trustee has petitioned the Court of Chancery for authority to complete and execute the recent agreement with the Rutland Company, and a hearing has been appointed at St. Albans, March 11.

Austin & Battle Mountain.

Surveys and estimates have been completed for this proposed line from the Central Pacific at Battle Mountain southward to Austin, Nev. The engineer's estimate of cost is \$728,700, towards which Lander County offers a subsidy of \$200,000.

Hannibal & St. Joseph.

Contracts have recently been made for 900 tons of steel rails and a large number of new ties to be delivered during the present month for use in repairs of track.

North Georgia & North Carolina.

A movement is on foot to organize a company to build a railroad from Asheville, N. C., west by south through Buncombe, Haywood, Jackson, Macon and Cherokee counties, the extreme southwestern section of North Carolina, to connect with the Marietta & North Georgia whenever that road shall be completed to Ducktown or to the Georgia State line.

Parker & Karns City.

It is now proposed to extend this road from Karns City, Pa., by way of Millerstown to Butler, about 16 miles. The road is now said to be paying well, and it is claimed that this extension would bring it a great increase of business.

Indianapolis & Springfield.

This company has resolved to make its road of 3-foot gauge and to use iron weighing 35 pounds to the yard. The line of the road, which is now under contract, with a section of 25 miles partly graded, is from Indianapolis westward by Bainbridge and Rockville to Montezuma. It occupies the same territory and almost the same location as the proposed extension to Indianapolis of the Indianapolis, Decatur & Springfield, the old Indiana & Illinois Central.

Negotiations are now pending for the formation of a company in Illinois to extend the road from Montezuma to Paris or Mattoon.

Portland & Ogdensburg.

A recent amendment to the charter of this company extends the time for the final completion of the road to Jan. 1, 1880.

Recently the towns which are bonded in aid of the Vermont Division were notified that the company could not meet the March coupons due on the town bonds. Finally, however, after some discussion, a note for six months, secured by deposit of bonds of the company, was given, on which the money, some \$6,000, was raised.

Maine Central.

This company has obtained from the Legislature the desired authority to connect the tracks of the Maine Central and Androscoggin divisions in Lewiston, and to abandon the present track of the Androscoggin Division from Leeds Junction to Crowley's. This change will doubtless be made at once, when all the trains of the Androscoggin Division will be run through Lewiston and the company will be relieved of the maintenance of five miles of track which is of little or no use to it.

Bangor & Piscataquis.

The Maine Legislature has extended the time allowed for the completion of this road, and has also extended for two years the time during which the city of Bangor may loan its credit to the road.

Northern Pacific.

The Dakota Division has been reopened through to Bismarck, and trains have begun running. A considerable amount of freight is being forwarded, much of it being supplies intended for parties on their way to the Black Hills.

United States Rolling Stock Company.

The Receiver of the Missouri, Kansas & Texas Railway has just closed a contract with the United States Rolling Stock Company for a large equipment of grain cars for Texas trade. The Rolling Stock Company has also closed contracts for every one of its passenger coaches. The latter company has just paid a dividend of three per cent. in gold on its capital of five millions.

Erie.

The bill providing for the reorganization of bankrupt companies in New York, which is specially intended to cover the case of the Erie, has made rapid progress in the Senate, although meeting with some opposition.

In consequence of the suspension of coal traffic 31 engines and the same number of train crews on the Eastern Division have been laid up. Several engines on the Delaware Division are also laid up for the same reason.

Dividends.

Dividends have been declared by the following companies:

- Lehigh Coal & Navigation, 2 per cent., quarterly, payable March 3.
- Nesquehoning Valley, 5 per cent., semi-annual, payable March 3.
- Philadelphia, Germantown & Norristown (leased to Philadelphia & Reading), 3 per cent., quarterly, payable March 3.
- New York Central and Hudson River, 2 per cent., quarterly, payable April 15.

Auction Sales of Railroad Securities.

In New York, March 1, at auction, Long Island Railroad first-mortgage bonds brought 102½; Reading & Columbia first-mortgage, 98; East Pennsylvania first-mortgage, 104½; American Dock & Improvement Co. first-mortgage, 104; Louisiana & Missouri River first-mortgage, 94; Warren Railroad stock, 102½; South Branch (of New Jersey) stock, 85.

Union Pacific.

The annual meeting was held in Boston, March 8. Mr. Gould offered a resolution that the contract between the company and the several parties who were or are beneficiaries or trustees on what is known as the Oakes Ames contract and the J. W. Davis contract, and the assignments thereof, and who may execute the same, be assented to by the stockholders, and the treasurer is authorized to execute the same. Adopted.

Another resolution by Mr. Gould, approving the contract between the road and the stockholders of the Credit Mobilier of America, was adopted.

The treasurer was authorized to execute, on behalf of the company, the draft of a bill in equity against the Credit Mobilier of America, advised by counsel for the purpose of asserting the claims of the company against said Credit Mobilier, and enjoining the prosecution of a suit by the latter corporation against the Union Pacific Railroad, now pending in the Supreme Court of Massachusetts.

An adjourned meeting is to be held June 1.

Cumberland & Pennsylvania.

An Annapolis (Md.) dispatch says that the bill amending the charter of this company came up as a special order Feb. 29 upon its third reading and was passed, with but one dissenting vote. The one-cent-per-ton tax on transported coal over the road for the benefit of the State was stricken out previously because of its unconstitutionality. The bill which has just passed the House by an overwhelming vote provides that on all coal transported by said company when the distance of such transportation shall not exceed five miles, a rate not exceeding four cents per ton per mile, and not exceeding three cents per ton per mile when the distance shall be more than five miles and not exceeding ten miles, and not exceeding two cents per mile when the distance shall exceed ten miles shall be charged. The reduction made is one cent per ton per mile on each class. The bill has been strongly pressed by all the mining companies of the Cumberland Region except the Consolidation Company, which owns the road and has, by means of that ownership, been enabled practically to control the coal business.

Pekin, Lincoln & Decatur.

Under the decree of foreclosure recently granted, John A. Jones, Master in Chancery, will sell this road at public auction in Springfield, Ill., April 21. The sale includes the entire road, 68 miles, and all the property of the company. Under the terms of the decree bondholders who have deposited their bonds are allowed to bid for the property.

Rockford, Rock Island & St. Louis.

Notice is given to holders of bonds, coupons and certificates of indebtedness of this company to present them at the office of the Clerk of the United States Circuit Court in Chicago and receive the dividends awarded them under the decrees confirming the sale of the road.

Pacific Mail.

A meeting of the directors was held in New York, March 6, to consider a plan for relieving the company from its present financial difficulties by an issue of bonds to be offered for sale to the stockholders.

Cherry Valley, Sharon & Albany.

A meeting of the towns holding stock in this road is to be held shortly to consider what had best be done in view of the proceedings begun to foreclose the second mortgage.

Wyandotte, Kansas City & Northwestern.

The track is now laid to Buckner Hill, Mo., 23 miles eastward from Kansas City. The grading is finished to Wellington, 11 miles further, and tracklaying is in progress. The iron for the line as far as Lexington has been bought and a considerable part of it delivered.

New York & Canada.

It is said that a contract has been let for the branch which was located some time since from West Chazy, N. Y., northeast to Rouse's Point, about 15 miles. The construction of this branch will enable trains to run to Rouse's Point direct, avoiding the detour by Moores Junction.

Wilmington & Western.

In the United States Circuit Court recently Receiver Canby came into court and asked for instructions in the matter of certain suits brought to recover a balance claimed to be due on the contract for the construction of the road. The Court directed the Receiver to defend the suits in the name of the company.

Worcester.

A pier has been commenced at the terminus on Chincoteague Bay for the purpose of facilitating the transfer of oysters and other freight from boats to the cars. The pier will be 200 feet by 30, with an arm at the end 70 by 30 feet, on which a depot will be built. Two tracks will be laid on it.

Lafayette, Muncie & Bloomington.

In the suit brought in the United States Circuit Court on behalf of the Indianapolis, Cincinnati & Lafayette Company the Court has just decided that the crossing of the two roads near Lafayette, Ind., was on ground belonging to the Indianapolis, Cincinnati & Lafayette, and should not have been made until permission had first been secured from that company. Under this decision the crossing has been taken up. It is said that there is now a prospect for an amicable arrangement of the matters in controversy between the two companies.

Later news is to the effect that an agreement has been concluded by which this road, instead of crossing the Indianapolis, Cincinnati & Lafayette near Lafayette, will make connection with it at the former crossing place and run into the city on its track.

Minneapolis & Northwestern.

It is now proposed to go to work on this road and to build the first section of 11 miles from Minneapolis, Minn., to Osseo of 3-foot gauge, with wooden rails. The road can then be extended further and iron rails laid as the business may warrant such extension and improvement.

Terre Haute & Worthington.

This new company has filed articles of incorporation in Indiana. The capital stock is to be \$1,000,000, and the road is to extend from Terre Haute, Ind., southeast through Vigo, Clay and Greene Counties to Worthington on the Indianapolis & Vincennes road, a distance of 40 miles.

Indianapolis & Sullivan.

Articles of incorporation have been adopted by this company and a provisional organization completed. The capital is to be \$1,000,000 with power to increase. The line of the road is from Indianapolis by Monrovia, Eminence, Quincy and Bowling Green to Sullivan on the Evansville & Crawfordsville road, a distance of about 100 miles.

Aroostook.

The Maine Legislature at its recent session passed acts authorizing this company to build a branch or extension to Fort Kent; extending the time for the final location of the road; extending for two years the time during which Bangor City may vote aid, and authorizing the town of Lyndon to lend its credit in aid of the road.

Cincinnati, Hamilton & Dayton.

Winslow, Lanier & Co., No. 27 Pine street, New York, give notice that they are now prepared to pay off the issue of \$500,000 8 per cent. bonds due June 1, 1876, at par and accrued interest, or to exchange them for new 7 per cent. bonds at 101 and accrued interest.

The same firm is offering for sale first consolidated mortgage bonds of the company having 30 years to run and bearing 7 per cent. interest. The total amount secured by the consolidated mortgage is \$3,000,000; the United States Trust Company is trustee.

By the last annual report the bonded debt of the company was \$2,250,000; deducting the \$500,000 due in June, \$1,750,000. The company's road is 60 miles long, and it works 285 more under lease, being almost sole owner of 98 miles of the leased

road. The net surplus of earnings the last fiscal year, after paying interest and rentals, was \$197,192.75.

Grand Trunk.

This company, in London, Feb. 15, issued a circular inviting proposals for so much of the 5 per cent. perpetual debenture stock of the company as will produce £400,000. The terms of subscription were, 30 per cent. of the face of the stock payable Feb. 29, the balance April 15. Preference was to be given to stockholders of the company. From the proceeds of the issue £130,000 are to be used in paying off £71,000 International Bridge bonds, £16,000 Montreal & Champlain bonds and £43,000 due for cars and stations; the remaining £270,000 for providing for existing floating debt incurred for steel rails and changing gauge, and for providing new steel rails needed.

Gilman, Clinton & Springfield.

In the United States Circuit Court at Springfield, Ill., March 1, an order was entered directing F. E. Hineckley, late Receiver, to make a final accounting and report by March 15, or to show cause why he should not be required to do so.

In the suit of Morton, Bliss & Co. against the company an order was entered prohibiting the removal of \$300,000 bonds now deposited with the Fidelity Savings Institution of Chicago.

Toronto, Grey & Bruce.

At a meeting of the bondholders in London, England, Feb. 16, it was stated that the total bonded debt was \$1,600,000, of which \$260,000 matured in November, and is still unpaid, and \$4,000 will mature in June next. The floating debt was \$500,000, of which \$150,000 is a lien on the equipment. It is now proposed to reorganize the company on a basis of \$1,000,000 stock and \$2,000,000 bonds, the necessary authority having been obtained from the Canadian Parliament. This would give a capital account of about \$15,300 per mile. It is proposed to issue for each of the present \$500 bonds a new \$500 bond and \$100 stock, the remainder of the stock and bonds to be used in settlement of the floating debt.

The meeting voted to approve the plan after some discussion, in the course of which it was stated that the Canadian creditors could have had a receiver appointed, but had waited to see what action would be taken at this meeting.

St. Joseph & Denver City.

Notice is given that the time in which the bondholders will have the right to join in the reorganization of the company and the right to exchange Western Division bonds for lands is, by order of the United States Circuit Court, limited to April 20, 1876. A motion for the final confirmation of the foreclosure sales will be made at the term of that court to be held at Omaha, Neb., on the first Monday in May.

St. Louis & Southeastern.

Holders of Evansville, Henderson & Nashville first-mortgage bonds are requested by the committee to sign the bondholders agreement without delay. Copies can be found at the offices of the Union Trust Co., No. 71 Broadway, New York; Matthew Baird, No. 1,416 Chestnut street, Philadelphia, and J. F. Bullett, Louisville, Ky.

Hot Springs.

Passenger trains have begun to run regularly over this road from the St. Louis, Iron Mountain & Southern Junction at Malvern, Ark., to Hot Springs. The road is 21½ miles long and of 3-foot gauge; it has some high grades and sharp curves. It is well and sufficiently equipped. It will doubtless have a considerable traffic, being the only line for passengers and supplies to the famous Arkansas Hot Springs, which are already resorted to by a very great number of invalids and others, and the number is yearly increasing.

Laurens.

The track of this road is now rebuilt from the Greenville & Columbia road at Helena, S. C., to Clinton, 18 miles, leaving 14 miles yet to reach Laurensville. Work has lately been suspended, the reason given being that the local subscribers have not paid up. The South Carolina Company, which now owns the road, declines to go on unless the promised funds are forthcoming.

Paducah & Memphis.

It is said that an agreement has been concluded between this company, the bondholders, and the Southern Railroad Association, under which the road is to be completed, a certain amount of first-mortgage bonds to be used for that purpose and to be made a preferred lien upon the property.

Delaware, Lackawanna & Western—Morris & Essex Division.

A cave took place in the new tunnel through Bergen Hill, March 4. It was between shafts Nos. 5 and 6, where the tunnel is some 80 feet below the surface of the earth. At that point the rock was not very thick above the roof of the tunnel and the great weight of the earth above proved too much for the thin crust left. The result of the break on the surface was a sort of a well hole some 20 feet in diameter and 60 feet deep. The break is near the Jersey City reservoir and some local excitement was caused by a report that it was the result of a leak in the reservoir, which report was without foundation in fact.

St. Paul & Pacific.

Feb. 16 the Amsterdam bondholders' committee announced that it had information that the deposit of shares of main and branch lines required by section 8 of the new arrangement had been made; and the committee, in accordance with section 24 of the same agreement, designated four directors, as follows: John S. Barnes and Henry M. Baker, of J. S. Kennedy & Co.; A. G. Dulman, of Dulman & Schaff; and Wm. H. Scott, of the law firm of Chapman, Scott & Crowell, all of New York.

The committee are arranging with the company the manner in which the committee's certificates representing bonds shall be accepted in payment for the company's lands. Great quantities of the bonds had changed hands in Amsterdam just previous to this announcement. Within a fortnight the 1869 bonds rose from 12½ to 17½; the second section bonds (main line), from 21 to 26; the First Division (branch line), from 42 to 48; the consolidated loan from — to 22; and the St. Vincent and Brainerd extension bonds from 8 to 9. The prospect of completing the latter lines in time to save the land grant is not considered good. The Amsterdam correspondents of Dulman & Schaff are said to have made most of the purchases, and are supposed to have secured for their clients nearly one-fifth of all the issues. It is said that contracts have been made for the sale of about 450,000 acres of the company's land, which will cancel a considerable amount of bonds.

Chicago & Northwestern.

On the announcement in Amsterdam of the repeal of the Potter law, Chicago & Northwestern preferred shares came in to great demand, and the price advanced in one week from 54 to 59, while all the issues of bonds advanced to above 80.

Chicago, Milwaukee & St. Paul.

The La Crosse (Wis.) Republican says: "The big dam, or dike, now being built across the Mississippi River, about three miles above this city, by the Chicago, Milwaukee & St. Paul Railway, is really an immense piece of work. Employment is given to 450 men and 60 teams. The embankment will be 1,600 feet in length, running from island to island, and well riprapped into each shore, through a depth of water of from 12 to 24 feet, making an average of 14 feet. The bulkwork to this dam, or dike, is built of piles, a row of 200 in a straight line, which forms a kind of fence or stockade firmly linked together with heavy pieces of timber. Then be-

gins the sinking of mattresses, which is a new way or system of damming practiced by the Milwaukee & St. Paul Railway. These mattresses are constructed in the following manner: First, a layer of brush or limbs of trees, then a layer of hay, another layer of brush, another layer of hay, firmly pinned together by four heavy planks at the top and four at the bottom. The mattresses are 16 by 20 feet square and two feet high. They are drawn into the water by a steam pile driver, when the throwing of stone upon them is commenced and continued until they are forced to the bottom and the stones reach the surface; then brush, hay, gravel and more stone are heaped upon them to a height of eight feet above the surface of the water. This work is very secure, and will not yield to the strongest pressure. It is calculated that time will only strengthen it. So far there has been no break, and only 250 feet remains to be done to complete the dam, which will be finished by Tuesday night. Two thousand rocks will be used in this dam.

"It is said and thought by some that this dam will be a serious obstruction to navigation in the vicinity of La Crosse, and that it will turn the heavy current of water around on the west side of Barron's Island. If it should do this, the Chicago, Milwaukee & St. Paul Railway Company will immediately dam the Minnesota channel and keep the water in its proper course."

Indianapolis, Bloomington & Western.

A circular issued by direction of the Receiver notifies all employees that he cannot be responsible for loss of time or damages resulting from injuries received while employed on the road, and that every employee, in accepting a position or employment, assumes all risk of accidents, and is expressly understood to agree that neither the Receiver nor the company shall be liable, under any circumstances, whether of his own negligence or that of other employees, or otherwise, for any injury to person or for any loss of time or expenses incurred by reason thereof. The net earnings of the road are too small and the liabilities of the company too large to justify pensioning injured employees or their families; therefore the men must be employed with the distinct understanding that they will be paid only the agreed wages, and that they must themselves assume all risk incident to the position and business.

Macon & Brunswick.

The act authorizing the issue of Georgia State bonds in exchange for the bonds of this company indorsed by the State failed to pass the Legislature. A bill was passed authorizing the issue of new 7 per cent. State bonds having 20 years to run to an amount sufficient to pay the interest due and falling due on the indorsed bonds which are now recognized by the State. The act extends also to the indorsed bonds of the North & South road.

The State board of directors has finally rejected the bids made for the lease or sale of the road, and the matter is referred back to the Governor, who will decide what action is to be taken.

Kingston & Pembroke.

At the annual meeting in Kingston, Ont., Feb. 9, it was reported that the line was in operation from Kingston northward to Sharbot Lake, 45 miles. The total cost has been \$916,916, of which \$128,559 was expended in 1875. Some trouble has arisen from the failure of the County of Frontenac to pay the bonus voted, but negotiations are in progress for a settlement. A bonus of \$3,750 per mile has been secured for 16 miles of the extension northward.

Augusta & Spartanburg.

A preliminary survey is to be made for a line from Spartanburg, S. C., southward to Augusta, Ga., about 110 miles. Nearly enough has been raised along the line to pay for the survey.

RAILROAD LAW.

Carrier's Liability for Goods Taken by Legal Process.

In Yohe against the Ohio & Mississippi, the Indiana Supreme Court recently reaffirmed the doctrine that a common carrier may defend against a claim made by the shipper of goods by showing that the goods were taken from him by legal process. The carrier has no right to resist a writ legally presented, but must surrender the goods to the power of the State. The *Central Law Journal* says: "The court added to the rule the important qualification that in order to relieve himself the carrier must show that he gave to the consignee immediate notice of the seizure. Another distinction which might be taken would seem to be between a case of seizure under process *void* on its face, and process valid, or merely erroneous. In the case of void process, where the officer and all assisting him would be trespassers, it might be proper to require the carrier to show that he had not yielded the goods without a contest. But still the distinction between void and erroneous process is often, perhaps, more refined than it is sensible or practical."

Liability for Drunkenness of an Employee.

The New York Court of Appeals, in *Cleghorn against the New York Central & Hudson River Company*, which was an action against a railroad company to recover damages for injuries to plaintiff caused by the negligence of its servants, held that evidence that the servant was drunk at the time, and that he was of intemperate habits, which were known to the agent of the company having power to employ and discharge such servants, was admissible in aggravation of damages.

Recovering Property in the Hands of a Receiver.

In *Hills against Parker*, the Massachusetts Supreme Court held that the owner of a locomotive engine may maintain replevin for it against the agent of a railroad corporation, whose property is in the hands of receivers, without obtaining leave of the court appointing the receivers, if the corporation had no interest in the engine, although it is used on the railroad.

Conditional Subscriptions to Stock.

In the Philadelphia & Chester County Company against Caley the Pennsylvania Supreme Court laid down the following principles:

1. Subscriptions made to the stock of a company before the procurement of the charter are to be held as absolute and unqualified, and any condition attached thereto is void. The commissioners appointed to receive such subscriptions are not agents of the corporation, for it is not yet in being; they are rather agents of the people, acting under limited powers defined by statute, which every one is bound to know. If any one be led by misrepresentations made by such agents it is his own fault.

An organized company, however, may receive conditional subscriptions; and is bound by such conditions. A person who subscribes without conditions does so in view of the general powers conferred on corporations by the State, and he cannot, therefore, set up an unlawful act of the directors as a plea for non-payment of his subscription. Should he make a conditional subscription and the character of the contract be altered without his assent in a material point, actually, or by the intervention of a power beyond his control, such alteration makes his release from the subscription. An important alteration of the route of the road by act of the Legislature would be an instance of such intervention.

Railroad on a Public Street.

In *Joliet*, against the Chicago, Rock Island & Pacific Company, the Illinois Supreme Court held:

1. That the doctrine of equitable estoppel may apply to municipal corporations in regard of matters of public right.

2. That the use of public streets and public squares for the right of way of a railroad is a public and not a private use.

3. That the dedication of property to the public use as "public ground" is a dedication to an unrestricted use, and that the representatives of the public having control of the same may direct its application to any specific public use.

4. That the authority conferred upon the board of directors of the Chicago & Rock Island Railroad Company to locate the line was conferred upon them as the agents of the State, and that their location of such line was to all intents and purposes the act of the State itself. Also, that it conferred upon them the authority to locate the line across any public ground under the contract of the Legislature as the representative of the public, unless a previous application of the same property to another use raised a presumption of a restriction of the power conferred upon the board. And that the fact that the Legislature had directed the erection of the county buildings upon this square, under the circumstances of this case, did not raise such a presumption.

Express Companies' Receipts.

In a suit against the Adams Express Company involving the legal construction of a clause in the receipt limiting the company's liability to \$50, unless the value of the package shall be stated by the shipper at time of shipment, the United States Circuit Court ruled that the receipt was a binding contract, and that as the plaintiff did not state the value of his shipment at the time of delivery to the express company the responsibility of the latter was limited to \$50, and the plaintiff could only recover that amount even though the actual loss had been occasioned by the negligence of the defendant.

Liability of Sleeping-Car Companies.

In the United States Circuit Court at Memphis, Tenn., in the case of Blum against the Pullman Southern Car Company, which was a suit to recover \$3,000 alleged to have been stolen between Humboldt and Memphis, while Blum was a passenger and asleep on one of the sleeping cars of the defendant, Judge Brown charged the jury that the sleeping-car company was not liable as innkeepers or common carriers like railroad companies, which was held by the Supreme Court of Indiana. The private boarding or lodging-house or restaurant is responsible as an innkeeper for the loss of goods by guests. The sleeping-car company must take reasonable care of the guests and their property, especially while the guests are asleep. If the sleeping-car company was negligent, they became liable, and if the plaintiff was negligent as to taking care of his own property the company should not be held liable. The sleeping-car company is liable only for such property as is usually carried about the persons of passengers, such as clothing, small baggage, and such amount of money as is necessary for traveling expenses. If the plaintiff's loss was caused by the want of care on the part of the defendants, he should have a verdict for such reasonable amount for traveling expenses as the jury may deem necessary. The jury returned a verdict for the plaintiff for \$100.

Measure of Land Damages.

In *McTerren* against the Mount Alto Company, the Pennsylvania Supreme Court held that, in a suit to recover damages for land taken by a railroad company, it is proper to allow the company to submit evidence to prove that the plaintiff's land contains iron ore and that its value as such ore land had been increased by the new railroad to an amount exceeding the damages and the value of the land taken for the road.

Railroads in the New Texas Constitution.

The railroad article as finally adopted by the Texas Constitutional Convention in the Constitution just adopted by the people, is as follows:

Section 1. Any railroad corporation or association, organized under the law for the purpose, shall have the right to construct and operate a railroad between any points within this State, and to connect at the State line with railroads of other States. Every railroad company shall have the right with its road to intersect, connect with or cross any other railroad; and shall receive and transport each the other's passengers, tonnage and cars, loaded or empty, without delay or discrimination, under such regulations as shall be prescribed by law.

Section 2. Railroads heretofore constructed, or that may hereafter be constructed in this State, are hereby declared public highways and railroad companies common carriers. The Legislature shall pass laws to correct abuses and prevent unjust discrimination and extortion in the rate of freight and passenger tariffs on the different railroads in this State; and shall from time to time pass laws establishing reasonable maximum rates of charges for the transportation of passengers and freight on said railroads, and enforce all such laws by adequate penalties.

Section 3. Every railroad or other corporation, organized or doing business in this State under the laws or authority thereof, shall have and maintain a public office or place in this State for the transaction of its business, where transfer of stock shall be made, and where shall be kept, for the inspection by the stockholders of such corporation, books in which shall be recorded the amount of capital stock subscribed, the names of the owners of the stock, the amounts owned by them respectively, the amount of stock paid, and by whom, the transfer of said stock with the date of the transfer, the amount of its assets and liabilities, and the names and places of residence of its officers. The directors of every railroad company shall hold one meeting annually in this State, public notice of which shall be given thirty days previously, and the President or Superintendent shall report annually under oath to the Comptroller, or some officer designated by law, all of their acts and doings, which report shall include such matters relating to railroads as may be prescribed by law. The Legislatures shall pass laws enforcing, by suitable penalties, the provisions of this section.

Section 4. The rolling stock and all other movable property belonging to any railroad company or corporation in this State, shall be considered personal property, and its real and personal property, or any part thereof, shall be liable to execution and sale in the same manner as the property of individuals; and the Legislature shall pass no law exempting any such property from execution and sale.

Section 5. No railroad or other corporation, or the lessees, purchasers or managers of any railroad corporation, shall consolidate the stock, property or franchises of such corporation with, or lease, or purchase, the works or franchise of, or in any way control any railroad corporation owning or having under its control a parallel or competing line; nor shall any officer of such railroad corporation act as an officer of any other railroad corporation owning or having control of a parallel or competing line.

Section 6. No railroad company organized under the laws of this State shall consolidate by private or judicial sale, or otherwise, with any railroad company organized under the laws of any other State, or of the United States.

Section 7. No law shall be passed by the Legislature granting the right to construct and operate a street railroad within any city, town, village, or any public highway, without first acquiring the consent of the local authorities having control of the street or highway to be occupied by such street railroad.

Section 8. No railroad corporation in existence at the time of the adoption of this Constitution, shall have the benefit of any future legislation, except on condition of complete acceptance of all the provisions of this Constitution applicable to railroads.

Section 9. No railroad hereafter constructed in this State shall pass within a distance of three miles of any county seat

